2010

Urban Water Management Plan

Camrosa Water District

7385 Santa Rosa Road

Camarillo, California 93012

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LIST OF ACRONYMS

AF	Acre-feet
AF/D	Acre-feet per day
AF/Y	Acre-feet per year
ASR	Aquifer Storage and Recovery
BMP	Best Management Practice
CamSan	Camarillo Sanitation District
CDPH	California Department of Public Health
CIS	Customer Information System
CFS	cubic feet per second
CSUCI	California State University Channel Islands
CVP	Central Valley Project
CUWCC	California Urban Water Conservation Coalition
CWRF / WRF	Camrosa Water Reclamation Facility
DHS	Department of Health Services
DMM	Demand Management Measures
DWR	California Department of Water
ETo	Evapotranspiration
FCGMA	Fox Canyon Groundwater Management Agency
GIS	Geographic Information System
GPCD	Gallons Per Capita Per Day
GPM	gallons per minute
HCWWTP	Hill Canyon Wastewater Treatment Plant
HET	High-Efficiency Toilets
ICS	Incident Command System
LAS	Lower Aquifer System
M&I	Municipal & Industrial
MCL	Maximum Containment Level
MGD	Million Gallons per Day
MS	Meter Station
MSA	Metropolitan Statistical Area
MSL	mean sea level
PHG	Public Health Goal
PVB	Pleasant Valley Basin
PVCWD	Pleasant Valley County Water District
RMWTP	Round Mountain Water Treatment Plant
RO	Reverse Osmosis
RWRMP	*Renewable Water Resource Management Plan*
SEMS	Standard Emergency Management System
SOAR	Save Open Space and Agricultural Resources
SRGMP	Santa Rosa Groundwater Management Plan
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids

UAS	Upper Aquifer System
ULFT	Ultra Low Flush Toilet
UWMP	*Urban Water Management Plan*
VCOG	Ventura Council of Governments
VC-Rule	Ventura County Regional Urban Landscape Efficiency Program
WBIC	Weather-Based Irrigation Controllers
WSDM	Water Surplus and Drought Management

Introduction

PURPOSE AND NEED

The Act requires that the Urban Water Management Plan (UWMP) developed by each agency be updated every five years and submitted to the Department of Water Resources for review. Due to newly enacted legislation, the required content of the UWMP has changed significantly for the 2010 UWMP preparation and is quite specific. A major water conservation-related bill passed during the 2009 session and signed into law by the Governor is SBX7-7, which amends the Act effective January 1, 2010. A key component of this new legislation sets a goal of 20 percent reduction in per capita water use and directs urban retail water suppliers to set both interim 2015 and final 2020 urban water use targets. Additionally, AB 1420, effective January 1, 2009, amends the UWMP Act to require that the terms of and eligibility for, any water management grant or loan made to an urban water supplier administered by the DWR, be conditioned on the implementation of water Demand Management Measures described in section 10631(f) of the UWMP Act.

This Urban Water Management Plan was adopted by the Board of Directors on June 8, 2011. The purpose of this plan is to:

- update the data contained in the Urban Water Management Plan 2005
- extend the planning horizon of that plan for an additional 5-year period
- provide comprehensive assessment of Camrosa's water resource needs for a 20-year planning period
- develop a plan to meet the Water Conservation Act of 2009's (SBX7-7) requirements for achieving interim 2015 and final 2020 urban water use targets
- provide the Department of Water Resources with information on present and future water sources and demands.

The UWMP has been coordinated with a number of agencies to ensure that data and issues are presented accurately. It fully complies with the content requirements of the Urban Water Management Planning Act and is integrated with the District's *Integrated Facilities Master Plan*.

Section 1 Plan Preparation

LAW

California Water code, Division 6, Part 2.6 Urban Water Management Planning, Section 10610 et seq.

10620(d) (2). Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

10621(b). Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c). The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

10642 Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643 An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644(a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

10645 Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

A. Coordination within the District

This plan was developed within Camrosa Water District to coincide with the 2011 update of the District's Integrated Facilities Master Plan. It reflects the most recent Water Supply and Water Demand Analyses completed for the Master Plan and relies upon relevant information on the District's groundwater resources contained the 1997 Santa Rosa Groundwater Basin Management Plan; a 2009 study by Norman N. Brown, PH.D., P.G., entitled, *Groundwater Geology and Yield Analysis of the Tierra Rejada Basin;* and J.P. Schaaf's 1998 CSU-Northridge MS thesis, *Hydrogeology of the Tierra Rejada Groundwater Basin* and various other sources of information within Ventura County on groundwater information for the Pleasant Valley, Santa Rosa and Tierra Rejada groundwater basins. This plan has also been coordinated with the Renewable Water Resources Management Plan adopted by the District in October, 2006.

B. Interagency Coordination

Of the approximately 30 square miles within the Camrosa Water District's boundaries, about 7 square miles lie within the City of Camarillo city limits, approximately 1.5 square miles lie within the boundaries of the City of Thousand Oaks and 21.5 square miles lie within the unincorporated area of Ventura County.

In 2010, 19,561 acre-feet (AF) of water was produced or imported by the District and delivered to District customers for both potable and non-potable use. Approximately 45% of the total water supply was recycled water purchased from the City of Thousand Oaks and diverted from Conejo Creek for use as non-potable irrigation supply; 8% recycled water produced from the Camrosa Waste Water Treatment Plant; 29% was imported through the Metropolitan Water District and its wholesale agency, Calleguas Municipal Water District; and the remainder of the water was pumped from local groundwater aquifers. Two aquifers, the Tierra Rejada Groundwater Basin and the Santa Rosa Groundwater Basin, lie wholly within the District's boundaries and jurisdiction, while the Fox Canyon aquifer system, of which the District accesses only a portion for both water storage and recovery, is managed by the Fox Canyon Groundwater Management Agency (FCGMA), which was established December 21, 1982.

In June 2006, the District adopted the *Integrated Regional Watershed Management Plan for the Calleguas Creek Watershed*. The District developed the IRWMP in coordination with the Cities of Thousand Oaks, Camarillo, and Simi Valley; Calleguas Municipal Water District, Ventura County Water Works Districts 1 and 19, Ventura County Resource Conservation District; and Santa Monica Mountains Recreation and Conservation Agency. The broader Watershed Plan seeks to reduce reliance on imported water and over-drafted, confined groundwater aquifers by reclaiming poor quality, unconfined groundwater supplies and otherwise expanding water recycling projects.

The Watershed Plan, developed by a broad cross-section of stake holders, provides an umbrella under which this Urban Water Management Plan has been developed. A *Renewable Water Resources Management Plan* (RWRMP), prepared through consensus of the stakeholders involved in the Watershed planning effort, outlines an integrated set of facilities necessary to achieve the regional goals contained in that plan. The facilities envisioned in the plan reduce reliance on imported water supplies while improving water quality through the managed transport of salts out of the watershed. The goals and objectives of the RWRMP are reflected in the projections and projects incorporated in this UWMP.

Copies of the draft 2010 Urban Water Management Plan were circulated and coordinated with the following agencies with direct interests in District's plan:

- Calleguas Municipal Water District (wholesaler)
- City of Camarillo
- City of Thousand Oaks
- California State University - Channel Islands
- County of Ventura
- Pleasant Valley County Water District

Table 1 below summarizes the efforts Camrosa Water District has taken to include various agencies and citizens in its planning process.

Table 1. Coordination With Appropriate Agencies						
Coordinating Agencies	Participated in UWMP Development	Contacted for Assistance	Received Copy of Draft	Commented on the Draft	Sent a Notice of Intention to adopt	Attended public meetings
Wholesaler (Calleguas MWD)		X	X		X	
Retailer (City of Camarillo)		X	X		X	
Retailer (City of Thousand Oaks)			X		X	
County of Ventura			X		X	
Cal State Univ. Channel Islands			X		X	
General Public			X		X	

C. Public Outreach, Plan Adoption, Submittal, and Implementation

In addition to coordination with other agencies, Camrosa Water District has solicited input from District customers and the public at large. Over the course of the last three years, the District has conducted a series of public meetings with groups of constituents to discuss priorities relative to water quality, reliability and cost, and to gauge public opinion on issues related to water conservation, recycling and reuse. Pertinent information from public interface has been used in the preparation of this Plan.

The District prepared this update to its Urban Water Management Plan over a period of several months during the same period that a new District *Integrated Facilities Master Plan* was being developed. Prior to the public hearing to review the plan and accept public input, notices were properly published in a local newspaper of general circulation within the District on May 7 and May 14, 2001, pursuant to Section 6066 of the Government Code. Information regarding the public hearing prior to adoption of this UWMP was also advertized in monthly bills and on the District's Web site.

The updated UWMP was adopted by the Board of Directors on June 8, 2011 and submitted to the California Department of Water Resources, the California State Library, the County of Ventura and cities within the District's service area within 30 days of adoption as required by the Urban Water Management Planning Act. This UWMP will be available for public review at Camrosa Water District headquarters during normal business hours. A copy of the resolution adopting the Urban Water Management Plan is attached as Appendix A. This plan includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning).

Section 2 System Description

LAW

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631. (a) Describe the service area of the supplier, including climate, current and projected population (population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier [and] shall be in five-year increments to 20 years or as far as data is available.

A. Location and Facilities

Camrosa Water District was formed in 1962 under the California Water Law section 30000 et. seq. as the Camarillo County Water District. Its original purpose was to supply potable water within its established boundaries. Subsequently, the District expanded its boundaries and also its operations to include wastewater treatment services. The District's name has changed twice, first, to the Camrosa County Water District in 1965 and then to its present name in 1987. Camrosa is among the largest water districts in Ventura County in number of connections and population served.

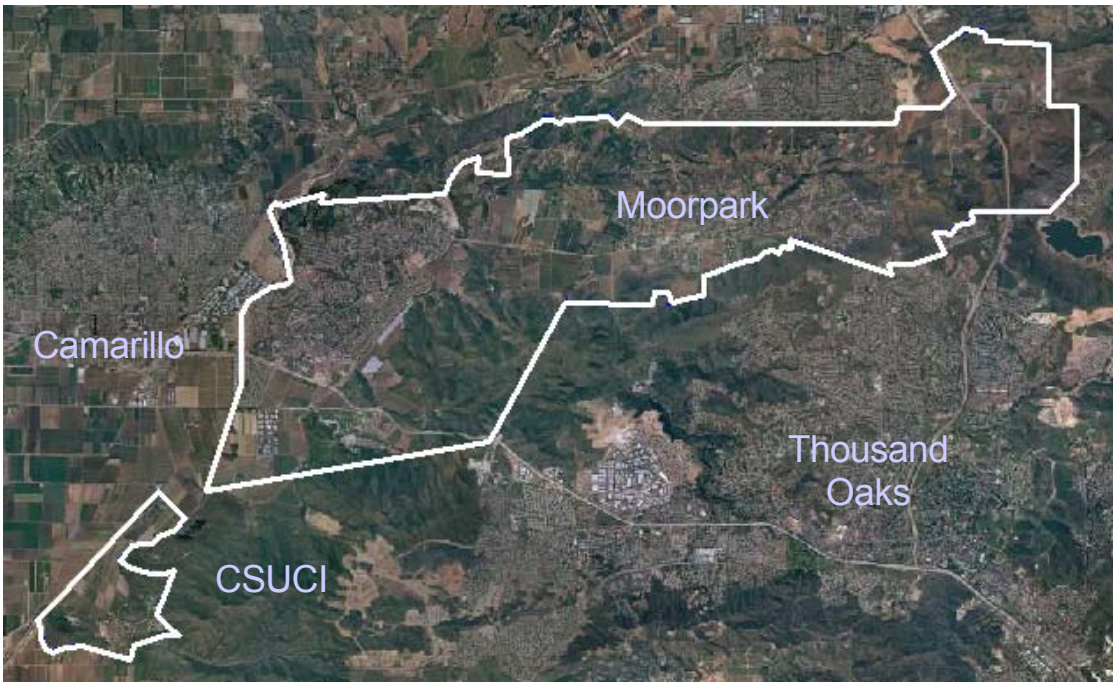

Figure 1 – Camrosa Water District Service Area Boundaries

Camrosa Water District is located, as shown in Figure 1, in the southern portion of Ventura County, surrounded by the Cities of Camarillo, Simi Valley, Moorpark and Thousand Oaks. In terms of geographic features, the District is bounded by Calleguas Creek on the west, the Las Posas Hills on the north, the Simi Hills on the east and the Conejo Hills on the south. Some of these features help define the Terra Rejada, Santa Rosa and Pleasant Valleys. The District serves three classes of water and provides wastewater services to various portions of this area.

B. Potable Water Service

Potable Water Service that meets all primary drinking water standards set forth by the California Department of Public Health is provided throughout the District, as illustrated by the highlighted areas in Figure 2 (different shades represent various pressure zones). Potable water is primarily a blend of State Water Project water imported through Calleguas Municipal Water District and well water obtained from the Tierra Rejada, Santa Rosa and Fox Canyon groundwater basins. The backbone of the potable water system was constructed in the late 1960's and service has been extended into newly developed areas, primarily by developers, in the ensuing years.

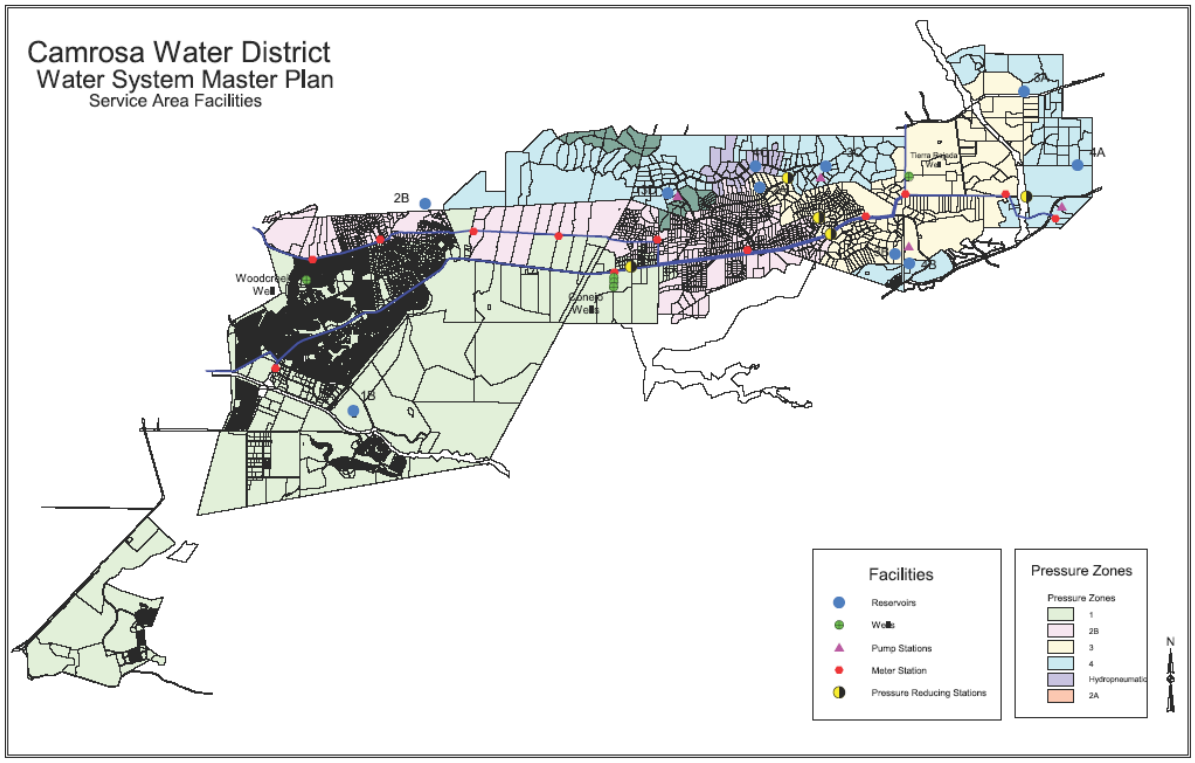

Figure 2 – District Potable Water Service with Facilities

Service was extended by agreement to California State University Channel Islands (CSUCI), located in the discontiguous area southwest of the main District boundaries, in 1981. Water is provided to CSUCI through a master meter located at the CSUCI property line. CSUCI owns and operates its own storage tanks and distribution system for the campus property.

In 2000, Camrosa acquired the distribution system of the Santa Rosa Mutual Water Company and began providing both potable and non-potable service to approximately 240 large parcels in Santa Rosa Valley. With the exception of the CSUCI system, Camrosa owns and operates all potable water distribution facilities within the District boundaries.

Camrosa's potable water distribution system consists of 150 miles of buried pipeline, with diameters up to 24 inches. The District also operates 10 reservoirs with a total storage capacity of 14.3 million gallons (or about 44 AF). The elevation differences within the District's service area necessitate the use of five pumping stations to provide service to customers at higher elevations. Roughly 79% of the potable water served by the District is used for residential, commercial, and industrial uses while the remaining water is used to serve agricultural and other irrigation needs. The District serves approximately 7,990 residential, municipal and industrial water connections and about 90 potable agricultural connections.

C. Recycled Water Collection and Treatment Systems

1. Wastewater Collection System

Wastewater service areas for the Camrosa Water District and the City of Camarillo are the result of an agreement negotiated between the agencies more than 45 years ago. Both City and District boundaries have changed several times in the intervening years resulting in service areas which do not necessarily comport to political boundaries (see Figure 2). Portions of the Camrosa water service area fall within the City boundaries. In the Mission Oaks area in particular, Camrosa is responsible for both potable water delivery and wastewater collection even though these areas are now within the City of Camarillo political boundaries. The City of Camarillo is responsible, through the Camarillo Sanitary District, for wastewater service in most of the unincorporated area of Camrosa south of US Highway 101, with the exception of annexed County and California State University property in the vicinity of the Camrosa Wastewater Reclamation Plant. The graphic below depicts the service areas in more detail.

The recycled water plan for Camrosa Water District is a cooperative effort among the City of Thousand Oaks, Calleguas Municipal Water District, Pleasant Valley County Water District, CSUCI, the City of Camarillo, and the Camarillo Sanitation District and is largely documented in the form of agreements between Camrosa and those agencies. These agreements for the use and distribution of recycled water produced by the various waste treatment plants provide the basis for the plan.

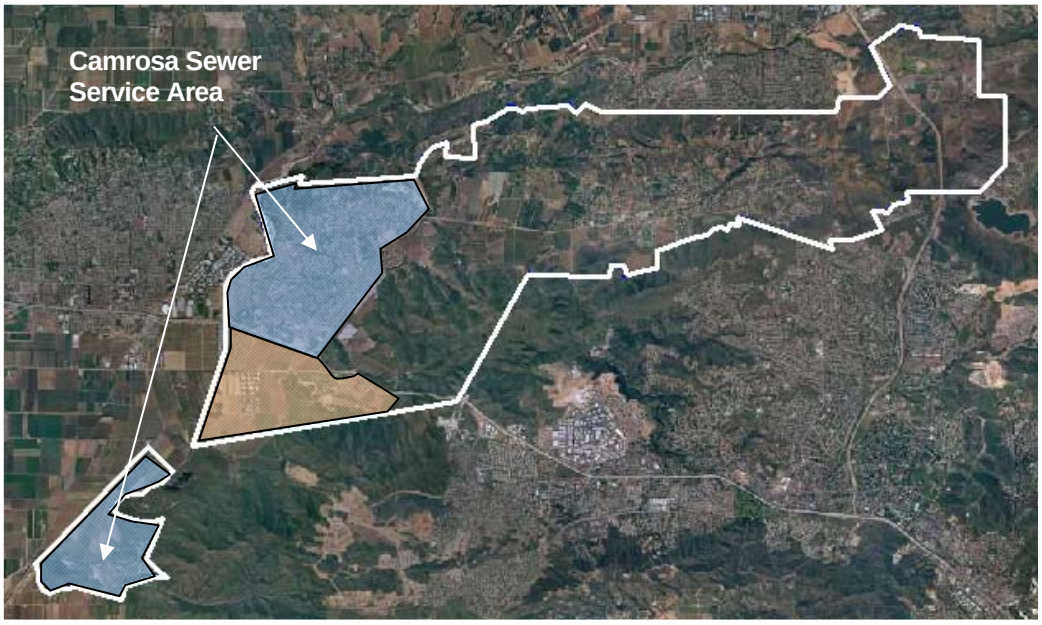

Figure 2 – Camrosa and Camarillo Sanitation District Service Areas

2. Camrosa Water Reclamation Facility (CWRF)

Commissioned in 1997, Camrosa operates a state-of-the-art Water Reclamation Facility. With a capacity of 1.5 Million Gallons per Day (MGD), the facility reclaims wastewater collected from approximately 9,200 connections in the central portion of the District.

The CWRF uses an anaerobic process to breakdown and consume the organic material in the incoming wastewater. A portion of this mixture flows through an anoxic zone where microorganisms denitrify the water biologically by consuming additional organic matter and reducing nitrates to nitrogen gas.

The water moves through both secondary clarifiers and tertiary filters to remove the remaining suspended solids to produce a clean, clear effluent. Disinfection is achieved through the addition of sodium hypochlorite to the filtered water to destroy harmful bacteria. The chlorinated water achieves the required contact time in the chlorine contact basin to ensure maximum bacterial reduction before the final product is pumped off-site to storage ponds for reuse.

Once disinfected, the tertiary treated water is stored in holding ponds and distributed to both agricultural and public landscape users through the recycled water distribution system. The ponds have a storage capacity of nearly 300 AF. During extremely wet periods, when there is no irrigation demand, surplus recycled water is discharged to Calleguas Creek, in which it runs to the ocean. Since 2000, the only discharge of excess effluent to Calleguas Creek has been 90 AF during the heavy storms of January and February, 2005.

The plant is being expanded to 2.25 MGD to accommodate District growth, primarily at CSUCI and is expected to be re-rated by summer, 2012. The CWRF produced approximately 1,522 AF of recycled water in calendar year 2010 and it is expected that plant recycled water production will continue to increase to approximately 2,200 AF/Y by 2035, necessitating the current expansion.

3. Conejo Creek Diversion Project

Backed by a voter-approved bond issue in 1966, the City of Thousand Oaks purchased the Hill Canyon Treatment Plant from the Conejo Valley Sanitary Company and began providing wastewater treatment within the city boundaries. Today, this facility provides treatment for wastewater from about 90 percent of the City. The Hill Canyon Treatment Plant currently treats an average of 11.0 Million gallons of wastewater per day. The water is treated to a tertiary level that complies with a wide variety of operational permits and is eventually discharged to Conejo Creek. Over time, the total volume of wastewater treated at the HCWWTP is expected to increase to 14.5 MGD and produce nearly 16,200 acre-feet of recycled water per year. This non-potable irrigation water serves a number of purposes, including support of a wetlands mitigation project, aquifer replenishment in the Santa Rosa Valley, serving riparian needs along Conejo Creek and serving irrigation needs in the Santa Rosa Valley and on the Oxnard Plain.

In 1997, the State Water Resources Control Board (SWRCB) issued Water Rights Decision 1638 granting a water right of up to 21.7 cubic feet per second (CFS) to the City of Thousand Oaks. Under a series of agreements between the City of Thousand Oaks, Calleguas Municipal Water District, the Pleasant Valley County Water District, and Camrosa; the Camrosa Water District purchases the water granted under the water right. The agreement regarding Camrosa's primary access to HCWWTP recycled water in Conejo Creek was executed in 1994. This 25-year contract will expire in 2019. Camrosa is currently in the process of renegotiating the agreement to retain rights to Conejo Creek water. Camrosa also built and operates the surface water diversion and associated pipelines, the "Conejo Creek Diversion Project," to distribute the water. Under agreements reached with private diverters, all of the private diverters have connected to the Camrosa potable water or non-potable irrigation water distribution systems since the Conejo Creek Diversion Project became operational.

Camrosa purchases all of the effluent discharged into Conejo Creek from HCWWTP and diverts it 6.8 miles downstream at the Conejo Creek Diversion Structure, which is located 300' south of US Highway 101. Water is diverted from the Conejo Creek using a specially designed diversion/pump plant structure located on the western embankment of the creek. The US Department of Fish and Game requires that 6 cubic feet per second (CFS) be returned to the creek from the diversion facility; besides that, the District captures all water that flows down Conejo Creek. During storms and prolonged wet periods, irrigation demand approaches zero and it temporarily goes offline. Approximately 3 miles of 30" pipe carry the diverted water from the structure to Camrosa's storage ponds, located near CSUCI. A pumping station at the ponds moves water as needed into District service areas in Camarillo and the Santa Rosa Valley through its Non-Potable Surface Water Distribution System, which is completely separate from the non-potable Recycled Water Distribution System described above in Section 2.C.2.

Surplus non-potable surface water is delivered west to Pleasant Valley County Water District PVCWD), where it is used as an irrigation source in lieu of groundwater that would otherwise be pumped from the Fox Canyon Basin. Further details concerning the use of non-potable surface water diversions from Conejo Creek are discussed directly below and in Section 4.E.2.

4. Camarillo Sanitary District (CamSan) Wastewater Treatment Plant

The Camarillo Sanitary District (CamSan) was formed in 1955 to provide wastewater treatment for most of what is now the City of Camarillo. The treatment plant occupies a 20-acre site on Howard Road next to Conejo Creek within the Camrosa Water District boundaries. Although the District does not currently receive water from CamSan, plans are in place to begin using tertiary-treated plant output in the District's non-potable recycled water distribution system by 2015 (see Section 4.E.3).

After primary treatment the wastewater undergoes secondary treatment using an "activated sludge treatment" process and is then sent into secondary clarifiers and ultimately disinfected in a contact basin using chlorine. Dechlorination is accomplished with sulfur dioxide before the effluent is delivered for agricultural purposes or discharged to Conejo Creek.

Over the years the treatment plant has undergone several modifications to increase its capacity and to incorporate new technologies. Construction is underway to install tertiary filtration to the treatment train to produce recycled water that meets all DHS Title-22 requirements. The plant currently treats about 4.0 million gallons of wastewater each day, with a maximum capacity of 6.75 million gallons.

D. Non-Potable Irrigation Water Service

Camrosa Water District has two distinct non-potable water distribution systems; one that distributes tertiary-treated, Title-22 product from Camrosa's Water Reclamation Facility and the other that delivers a blend of non-potable surface water diverted from Conejo Creek and local, non-potable groundwater. Due to significant differences in health code regulations and legal definitions between diverted surface water and Title-22 recycled water, the two systems are completely separate within the District; each has its own distribution system and storage facilities. The current service area for Title-22 recycled water from the CWRF is highlighted in purple in Figure 3 below. The service area encompasses all of the parcels adjacent to and surrounding CSUCI, including the campus itself and neighboring farmland, with the exception of the County-owned parcels in the northwest of the Campus Area.

The Conejo Creek Diversion Project was inaugurated in 2000. Non-Potable Surface Water, originally discharged from the City of Thousand Oaks' Hill Canyon Wastewater Treatment Plant 6.8 miles upstream from the diversion structure, is diverted from Conejo Creek and used for both landscape and agricultural irrigation in the areas highlighted in green in Figure 3. In some areas of the District, this water is augmented with groundwater to meet peak irrigation demands.

Areas that receive non-potable surface water include the County-owned property near CSUCI, farmland surrounding the Adolfo Industrial Park, farmland near the diversion structure and adjacent to the non-potable irrigation system pipeline into Santa Rosa Valley and the large agricultural area that lies within the Santa Rosa Valley Greenbelt area. Approximately 240 residential parcels, formerly a part of the Santa Rosa Mutual Water Company, receive both potable water as well as non-potable surface water to meet outdoor irrigation needs. In 2008, Leisure Village, a 415-acre retirement community, transferred over 550 AF/Y of landscape irrigation to the non-potable distribution system. Non-Potable irrigation water surplus to the District's needs is delivered to PVCWD and stored in the PVCWD reservoir located near the Camarillo airport.

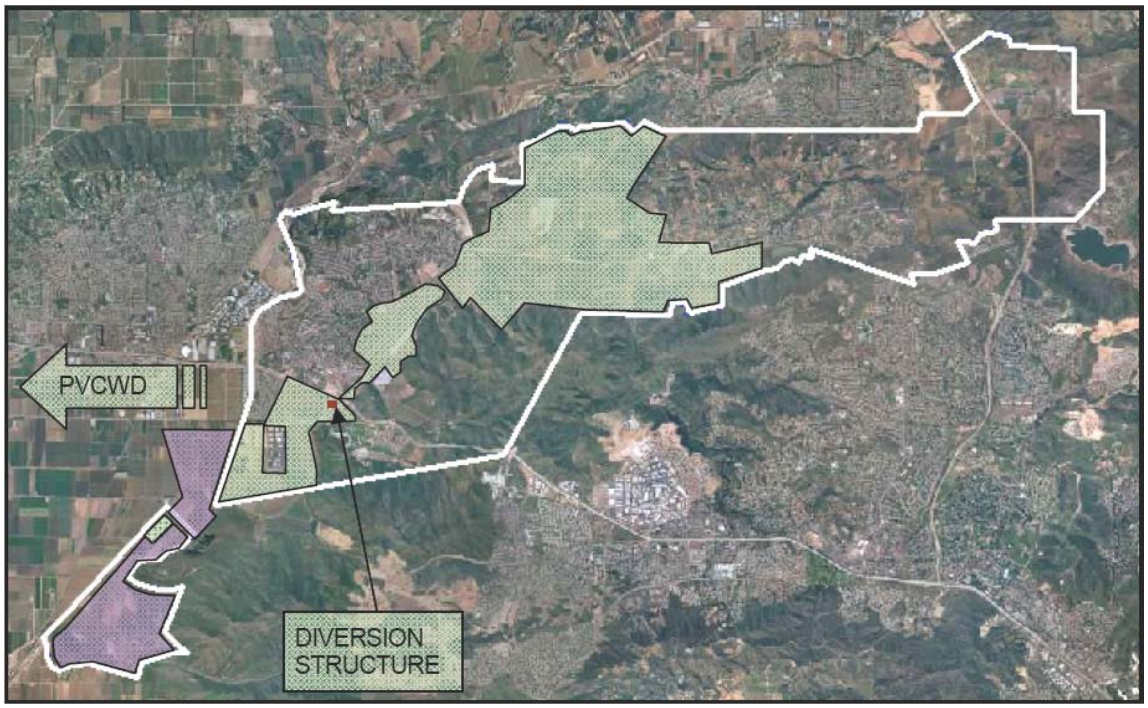

Figure 3 – Non-Potable Irrigation Water Service Areas

Although the two classes of non-potable water Camrosa serves are distinct and are delivered via separate distribution systems, they are both comprised primarily of tertiary-treated product from wastewater treatment plants and are therefore extremely reliable sources of non-potable irrigation water supply, even in the driest of years. For the purposes of this UWMP, in order to streamline calculations and condense explanation, the volume of non-potable water from the CWRF and the volume diverted from Conejo Creek are considered together and referred to collectively as "Non-Potable Irrigation Water" since both are used to meet irrigation demand within the District.

E. Topography and Climate

The majority of the developed area within the District is in three connected valleys. The Tierra Rejada Valley connects to the Santa Rosa Valley through a narrow gap in the hills cut by the Arroyo Santa Rosa. From there, the floor of the Santa Rosa Valley slopes gently down in a westerly direction to meet the broader Pleasant Valley near the western edge of the District. The Conejo Hills, which run along the Southern edge of the District, reach elevations of over 1,000 feet (about 700-800 feet higher than the adjoining valley floor). Owing to their steep nature, much of this hilly area remains undeveloped. To the north, the Las Posas Hills are not quite as steep as the Conejo Hills and have been subject to substantially more development.

The climate within Camrosa's service area is typical of Ventura County, Mediterranean in nature with generally mild temperatures and moderate rainfall. Based on precipitation stations maintained by Ventura County Flood Control District, Camrosa's service area receives an average of almost 15 inches of rainfall per year, varying from less than six inches in the driest years to more than 30 inches in the wettest years. On average, more than 90 percent of the annual rainfall occurs during the six-month period extending from November through April.

The average temperature fluctuates between an average low of about 44 degrees (January) and an average high of about 75 degrees (August). Table 2, based on the period of record May 1998 through January 2010 for the Oxnard California WFSO 045672 station, lists the monthly average climatic data for the Camrosa Water District Service area.

The Evapotranspiration (ETo) averages for the service area are also contained in Table 2. These monthly averages are based on historical data obtained from Station 156 – Camarillo, CA for the period October 2001 through January 2010.

Table 2. Monthly Average Climatic Data

Month	Standard Monthly Average ETo (inches per month)	Monthly Average Maximum Temperature (°F)	Monthly Average Minimum Temperature (°F)	Monthly Average Total Precipitation (inches)
January	1.83	66.8	45.6	2.91
February	2.20	65.9	45.7	3.76
March	3.42	66.9	47.0	1.75
April	4.49	67.6	48.1	1.24
May	5.25	70.0	52.8	0.44
June	5.67	72.5	56.4	0.03
July	5.86	75.8	59.5	0
August	5.61	76.0	59.2	0
September	4.49	74.8	57.7	0.10
October	3.42	73.7	53.7	0.63
November	2.36	70.3	48.8	1.19
December	1.83	66.4	44.8	1.60
Total	**46.43**	**N/A**	**N/A**	**13.64**

F. Demographic Factors

With the exception of the last several years of economic downturn, the number of connections and volume of water served within the District has grown slowly, but steadily since the formation of the District. Ventura County was predominantly an agricultural area when the District was formed and has struggled to maintain a viable agricultural economy in spite of pressures to develop agricultural acreage into more intensive urban uses. Primarily in response to these pressures, the voters of Ventura County and the City of Camarillo approved separate Save Open Space and Agricultural Resources (SOAR) initiatives designed to protect and preserve the community's agricultural and greenbelt resources. In accordance with the initiatives and the resulting adopted ordinances, any lands designated as Agricultural, Open Space or rural within the Ventura County's General Plan or within the City of Camarillo General Plan Map will remain so designated at least until December 31, 2020, unless the re-designation is approved by a vote of the people. Within Camrosa Water District, SOAR will have its greatest impact by preserving the Santa Rosa Valley and Tierra Rejada Greenbelt areas. This plan assumes that existing zoning designations and land uses will continue through the year 2020 and, even if the SOAR initiative lapses the existing land use and zoning designations will not change appreciably in the 15 years between 2020 and 2035

1. Historical Development with the City of Camarillo

a. Development within the City of Camarillo

In 1981, voters in the City of Camarillo approved a ballot measure limiting residential development to 400 units per year. In November 2005, the City Council took action to extend the growth ordinance for a period of 10 years, to expire in 2015. Since there still appears to be broad support for this annual growth restriction within the Camarillo city limits and there is no reason to believe the ordinance will not be extended again when it nears expiration.

During the planning horizon of this Urban Water Management Plan, the City of Camarillo is expected to reach full build-out. While projected growth rate within the City limits is bound by the City's growth ordinance, as a practical matter few parcels remain to be developed in that portion of the City that lies within the District service area and it is assumed that those parcels will be fully developed within the timeline of this UWMP.

b. Population Growth within the City of Camarillo

Overall, the growth rate for the City of Camarillo is projected by the Ventura Council of Governments (VCOG) to average approximately 1.2% per year through 2025 (VCOG projections for 2030 and 2035 – Not Available). On the whole, the City of Camarillo is growing at a slightly faster pace than the County of Ventura in its entirety. The pace is expected to slow considerably as the City approaches build-out. Growth in the unincorporated area of Ventura County is projected to be slightly less at 1.0 % per year while growth in the County as a whole, including all incorporated cities and the unincorporated areas, is projected to be slightly less than 0.9% per year.

c. Population Growth on the CSUCI Campus

The population estimates available from 2010 census tracts provide reasonable population growth-rate estimates for five of the six planning divisions in the District. The sixth planning division, the Campus Area, must be considered separately. CSUCI's projected development of additional housing units in the eastern Campus Area and ultimate build-out of dormitories to 2,000 beds will add approximately 3,300 new residents to the District over the planning period. Nearly two-thirds of that growth is expected to occur in the next 10 years. The daily commuter population will add additional demand for both water and wastewater services.

CSUCI has prepared a comprehensive master plan that estimates the future water and wastewater requirements for the Campus properties. The university has a reserved capacity of 700,000 GPD in the CWRF and has reserved sufficient capacity to provide for future wastewater flows. Further, CSUCI has estimated future water needs and has determined that it can live within existing water service agreements if recycled water is provided to meet irrigation demand. A separate recycled water system is complete and is now serving the campus. CSUCI existing and future potable and recycled water demands have been defined and are considered within this UWMP.

d. Population Growth within the District

The principal residential demand served by Camrosa comes from the eastern portion of the City of Camarillo. The remainder of the population is in Santa Rosa Valley, which does not expect any appreciable growth. It is therefore reasonable to assume that the rate of growth within Camrosa Water District urban areas outside of the CSUCI campus will mirror projected urban growth rates for the City of Camarillo.

Although the official projected growth rate for the unincorporated area of the County as a whole is 1.0%, non-urban growth within the District is not expected to be that high. The large greenbelt areas within Santa Rosa Valley and Tierra Rejada Valley will likely result in rural growth rates substantially less than that projected for the unincorporated areas of the County as a whole. It is expected that the growth rate for unincorporated areas within the District as a whole will likely average 0.75% or less as the Countywide SOAR initiative dampens growth in the Santa Rosa Valley for the foreseeable future. An even lower growth rate of 0.25% for the greenbelt areas will be assumed for the 25-year planning horizon.

2. District Population Projections

Census tract information as shown in Figure 4 below was obtained from the County of Ventura to establish the actual District population as of the 2010 Census. That data provided population counts and average parcel density for those parcels included in each tract.

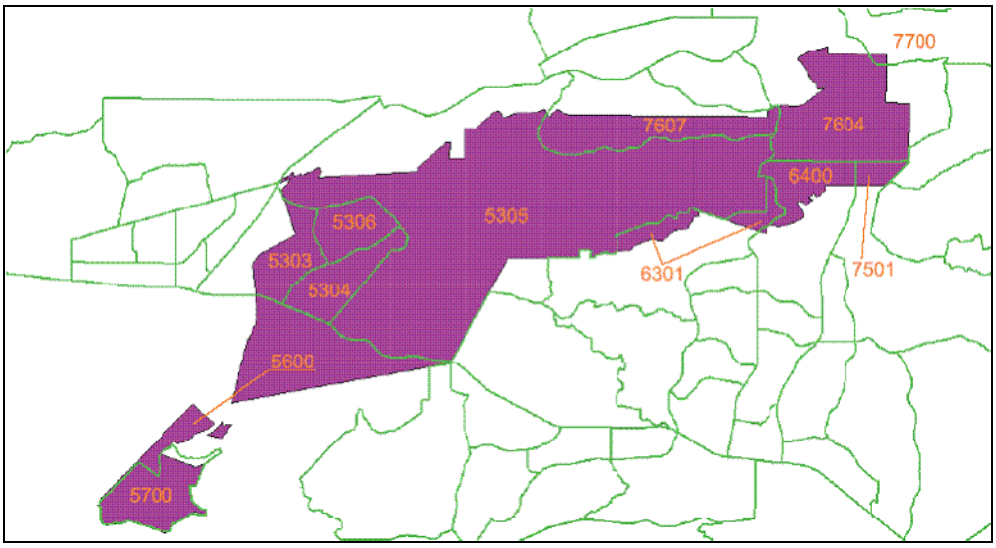

Figure 4 – 2010 Census Tract Number and District Boundaries

Source: Ventura County Resource Management Agency

Because the census tracts do not exactly coincide with District boundaries, the census tract boundaries were overlaid with the service boundaries and, using a count of parcels contained both within the service area and the Census tract multiplied by the average parcel densities for that census tract, to estimate District population in 2010. To project future population, growth projections for the City of Camarillo and the unincorporated County were applied to 2010. Table 3 contains the resulting population determinations.

Table 3. Population - Current and Projected

	2010	2015	2020	2025	2030	2035
Service Area Population	26,931	30,701	32,850	34,164	35,531	36,242
Source	Ventura County RMA derived from California DOF and US Census Bureau Data					

Section 3 System Demands

LAW

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.

(2) The water use projections shall be in the same 5-year increments described in subdivision (a).

A. Water Demand Analysis

Camrosa Water District serves potable water to a number of different water uses including residential, commercial & industrial, agricultural, institutional and governmental. Within these different water uses there are various categories ranging from high-density residential condominiums and apartments to low-density, large estate-style homes, master-metered communities, business parks, agricultural growers and other uses. It is a complex matter to determine the distribution of potable water demand over the District's service area.

Projected demands were calculated using current and estimated demands received from large users and in-house estimates based on current use and zoning designations. Future demand was estimated based on expected growth within the District, changes in zoning designations, and the transfer of potable water use to non-potable irrigation water distribution system. All related projects are discussed at length in the District's *Facilities Master Plan* and are summarized in Section 4.F.

1. 2010 Total Demand

The total 2010 demand by customers served by the Camrosa Water District was approximately 15,025 AF, as shown in Table 4, below. This includes all of the demand for water within the District, including potable water (imported and groundwater wells), diverted non-potable surface water and non-potable recycled water. These totals do not include surplus deliveries outside the boundaries of the District.

2010 was an extremely wet and cool year and demand was far below the preceding several years. In order to establish a more accurate approximation of current usage on which to base future demand projections, a normalized current year was established by averaging usage of the previous five years, as explained below in Section 3.B, Water Demand Projections.

Table 4. Total Demand: Accounts and Volume – 2005 & 2010				
	2005		2010	
Potable Water Sectors	**# of accounts**	**Volume (AF/Y)**	**# of accounts**	**Volume (AF/Y)**
Residential (all)[1]	7,027	6,478	9,918	5,397
Commercial/Industrial	178	1,036	207	579
Institutional and governmental	16	781	116	422
Landscape	581	624	581	653
Agriculture	249	1,299	89	506
Other (Misc)	130	94	113	12
Other (Potable Line Loss)	N/A	843	N/A	691
Total Potable	**8,181**	**11,155**	**11,024**	**8,261**
Non-Potable Irrigation Water				
Municipal & Industrial (all[1])	248	566	244	1,253
Agriculture	37	3,443	126	5,512
Other (Non-Potable Line Loss)	N/A	N/A	N/A	N/A
Total Non-Potable Irrigation	**285**	**4,009**	**370**	**6,765**
Total District Demand	**8,466**	**15,164**	**11,394**	**15,025**

1) Breakdown between Single- and Multiple-Family Dwellings not available

a. District M&I Demand

Potable Municipal and Industrial (M&I) demands include demand by all non-agricultural sectors including residential, public, landscape, and commercial and industrial users. The Potable M&I service area is generally concentrated in the western end of the District, within the City of Camarillo and includes the Mission Oaks, and Camarillo Springs Divisions. Commercial usage is primarily community shopping centers with grocery stores, small restaurants, retails stores, and offices. Industrial uses are light industry, again with low water demands. The Camarillo Springs area also includes the Camarillo Springs Golf Course. There is also a golf course and driving range within the Tierra Rejada Division at the eastern end of the District that are part of this category.

As the District expands its non-potable water distribution systems, additional neighborhoods will be able to take advantage of non-potable surface water for landscape irrigation. The area formerly served by Santa Rosa Mutual Water Company is already a dual-plumbed neighborhood and the common landscape areas of the master metered community of Leisure Village in Eastern Camarillo were converted to non-potable surface water in 2009.

b. District Agricultural Demand

Amongst agricultural users in the District, there is a demand for potable water and both classes of non-potable irrigation water: Title-22 WRF product and non-potable surface water diverted from Conejo Creek. The three primary areas within the District where agricultural demand exists is in the Eastern end of the District in Tierra Rejada Valley, in the Central Greenbelt area just east of the Camarillo City limits and extending into Santa Rosa Valley, and in the vicinity of the CSUCI campus in the Southwestern portion of the District.

Agricultural lands in the vicinity of the University and Camrosa's Water reclamation facility are the primary users of recycled water produced by the CWRF. Recycled water is the primary source of supply for these customers and is used almost exclusively due to its low cost, abundance and superior quality to local groundwater in the perched aquifer.

Non-potable irrigation water is supplied to agricultural users in the Central Greenbelt area. This surface water is augmented with untreated groundwater to meet demands in the eastern-most extremes of the service area. For some avocado growers in the northern-most portion of the Greenbelt, this water is blended with imported water to reduce the chloride level in the finished water.

Finally, SWP imported water is used to supply agricultural users in the upper pressure zones in Santa Rosa Valley and the Tierra Rejada Valley as well as some agricultural customers in the lower pressure zones who demand the higher quality water and are willing to pay the much higher cost for water. For some of these customers, non-potable surface water is not available at the present time. It is expected that some of the demand for potable agricultural water will decline as the non-potable distribution system is expanded further and the cost of imported water continues to rise.

As can be seen from Table 4, the number of agricultural accounts decreased significantly between 2005 and 2010. This is due primarily to the reassessment of agricultural parcels within the Camrosa Water District in 2008. When Metropolitan Water District ended the Interim Agricultural Water Management Program, which had offered discounted water rates to agricultural customers, Camrosa followed suit and established one cost scale for potable water. Even though classification as agricultural producers no longer affected customers' water rates, Camrosa thought it pertinent at the time to assess how many of its accounts were primarily or exclusively agriculture operations. Approximately 150 customers that had previously been identified as agricultural users were found to not meet the minimum acreage/crop requirements and were reclassified as residences. The reclassification also affected the volume of water considered agricultural irrigation, as shown in the decrease between 2007 and 2008 in Table 5 below, though the exceedingly low agricultural demand in 2010 (506 AF) was the result of abnormally cool and wet weather all year.

c. Sale of Surplus Water

In 2005, 5,503 AF of surplus water was delivered to Pleasant Valley County Water District and out-of-bounds irrigators. The availability of surplus water, however, has declined considerably as demand for non-potable water increases within the District's service area. In 2010, only 4,880 AF of surplus water was available. However, as additional non-potable water becomes available through increases in wastewater plant output, and the quality improves making supplies more marketable, surplus water available for sale is expected to fluctuate between 5,000 and 6,500 AF/Y after 2015 (see Table 9 below).

B. Water Demand Projections

Future demands in the District for 2010 through 2035 were projected based on an evaluation of existing zoning, planning data and land use maps for the various areas within the District, population projections, and discussions with City, County, and various special district staff. Anticipated land use changes from current zoning were incorporated into the analysis. It must be noted that the demand projections depend on the long-term accuracy of the available planning documents. If the Cities, County, or special districts, significantly revise their land use maps or general plans, the population projections and corresponding demands may also change significantly.

It was assumed land designated on current land-use maps for commercial or residential use would be "fully developed" over the next 20 years and would reflect the population projections contained in Table 3 above. It was assumed that parcels currently in agricultural but zoned for M&I use would be developed over the next 20 years.

It was assumed that parcels currently zoned agricultural will remain in agriculture during the planning period, primarily due to the impacts of SOAR and the apparent desire of the community to maintain the greenbelt and agricultural aspect of the undeveloped land within the District. There is little undeveloped land suitable for agricultural use within the District boundaries and there is little likelihood there will be significant increases to the base irrigation demands. Much of this agricultural and otherwise undeveloped land will be transferred from the potable distribution to the non-potable irrigation water distribution system.

The current water use for 2010 is presented in Table 4 above, along with 2005 historical usage. Because 2010 was an abnormally wet and cool year, agriculture and landscape irrigation demand was extremely low. In order to assume a realistic baseline demand off of which to more accurately project growth, the previous five years' demands were averaged. These five years were assumed to be an adequate cross-section of demand extremes, as they included the driest year on record (2006), two other dry years (2007 and 2008), an average year (2009) and a very wet year (2010). Table 5 displays the previous five years and their average, which is used as the projection baseline.

Table 5. Baseline Demand for Projection: Average Demand 2006-2010 (AF/Y)

Potable Water Sectors	2006	2007	2008	2009	2010	AVG
Residential	7,393	7,011	7,285	6,312	5,397	**6,680**
Commercial/Industrial	970	1,023	880	728	579	**836**
Institutional and governmental	527	567	642	476	422	**527**
Landscape	854	748	713	747	653	**743**
Agriculture	2,231	2,359	1,585	1,061	506	**1,548**
Other (Misc)	109	17	36	11	12	**37**
Other (Potable Line Loss)	N/A	N/A	N/A	N/A	691	**519**[1]
Total Potable	**12,084**	**11,725**	**11,141**	**9,335**	**8,261**	**10,890**
Non-Potable Irrigation Water						
Municipal & Industrial1	167	839	1,166	1,436	1,253	**1,285**[2]
Agriculture	6,169	5,050	5,301	5,820	5,512	**5,570**
Other (NP Line Loss)	N/A	N/A	N/A	N/A	N/A	**343**[1]
Total Non-Potable Irrigation Water	**6,336**	**5,889**	**6,467**	**7,256**	**6,764**	**7,198**
Total District Demand	**18,420**	**17,614**	**17,608**	**16,591**	**15,025**	**18,088**

1) Line Loss is estimated 5% of total potable and non-potable, respectively, prior to its inclusion.
2) Because of real transfer of over 500 AF/Y of NP demand to Leisure Village in 2008, Non-Potable Irrigation Water M&I use was averaged from only three previous years, 08-10

Transfers of potable irrigation to the non-potable distribution system make up the bulk of the changes in Tables 4, 6 and 7; while non-potable demand is projected to increase 3,217 AF/Y over the planning horizon, total District demand is only projected to increase 2,495 AF/Y. New development within the District will add an estimated 932 AF/Y of (primarily indoor) potable demand, but the transfer of roughly 2,658 AF/Y from potable to non-potable use resulting from the expansion of the non-potable distribution system (see Section 4.F – Future Water Projects) combine for a net 1,065 AF/Y reduction in Districtwide use of potable water.

Based upon the future growth within the District, the total water demand within the District by 2015, shown in Table 6, is expected to increase to 18,453 AF/Y including imported water, recycled water, groundwater and Conejo Creek surface water. This is an increase of about 22% over total 2005 demand for water within the service area and reflects increased use of non-potable water as the non-potable distribution system is expanded. M&I demands in 2015, which include all residential, public, commercial and industrial and landscape uses of both potable and non-potable water, are projected to be approximately 11,506 AF. 2020 and 2025 projections are also included in Table 6.

Table 6 includes projection estimates for 2030 and 2035. By 2035, the M&I Demand is expected to increase to 15,057 AF/Y. This represents an increase of approximately 23% over current demand and reflects the general population growth expected in the District.

During the same period, agricultural demands placed upon the District will not change very much, and are projected to be 4,664 AF/Y by 2035. Some reduction in agricultural demand is expected as parcels are developed. However, the significant increase in projected non-potable demand is primarily a result of making non-potable water available to Tierra Rejada Valley to displace pumping of high quality groundwater from the Tierra Rejada Basin.

In addition to demand forecasted for the various classes of water delivered within the District, some line-loss is experienced. Line loss is the difference between the total meter readings for water produced or imported, and the aggregated meter readings of water delivered and billed and is usually the result of minor pipe leakage, meter inaccuracy, or pipe ruptures. Historically, line loss has averaged approximately 4.8% of production, but it approached 7.5% in 2005. The District has initiated action to evaluate the existing delivery systems to ensure line losses are minimized, the success of which is evidenced by the decrease to just under 6% line loss in 2010. Line loss for future years has been projected at about 5% and is included in the tables below.

Camrosa plans to meet the Water Conservation Act of 2009's (SBX7-7) requirements for achieving interim 2015 and final 2020 urban water use reduction targets by continuing to shift commercial and residential irrigation and agricultural water demands from potable to non-potable irrigation water supplies. Using this strategy, the District has already demonstrated a reduction in imported, potable State Water Project water and local groundwater supplies between 2005 and 2010, as shown in Table 4 above. With further expansion of the non-potable system and augmentation of non-potable irrigation water supplies, additional reductions in potable water use are anticipated over the planning period.

Table 6. Projected Demand: Accounts and Volume – 2015-2025

	2015		2020		2025	
Potable Water Sectors	**# of accounts**	**Volume (AF/Y)**	**# of accounts**	**Volume (AF/Y)**	**# of accounts**	**Volume (AF/Y)**
Residential (all)[1]	10,186	6,517	11,486	6,176	12,686	6,069
Commercial/Industrial	202	883	202	1,093	202	1,190
Institutional and governmental	116	570	128	634	136	685
Landscape	581	909	479	750	323	506
Agriculture	89	1,376	71	1,187	53	1,030
Other (Misc)	113	41	113	100	113	100
Other (line Loss)	N/A	515	N/A	497	N/A	479
Total Potable	**11,287**	**10,811**	**12,479**	**10,437**	**13,513**	**10,059**
Non-Potable Irrigation Water						
Municipal & Industrial (all[1])	394	1,708	3,330	4,291	4,826	5,102
Agriculture	126	5,570	121	4,090	121	4,090
Other (Non-Potable Line Loss)	N/A	364	N/A	419	N/A	460
Total Non-Potable Irrigation Water	**520**	**7,642**	**3,451**	**8,800**	**4,947**	**9,652**
Total District Demand	**11,807**	**18,453**	**15,930**	**19,237**	**18,460**	**19,711**

1) Breakdown between Single- and Multiple-Family Dwellings not available

Table 7. Projected Demand: Accounts and Volume – 2030-2035

	2030		2035	
Potable Water Sectors	**# of accounts**	**Volume (AF/Y)**	**# of accounts**	**Volume (AF/Y)**
Residential (all)[1]	12,686	6,069	12,686	6,069
Commercial/Industrial	202	1,190	202	1,190
Institutional and governmental	136	695	136	695
Landscape	150	235	150	235
Agriculture	35	574	35	574
Other (Misc)	113	100	113	100
Other (Potable Line Loss)	N/A	443	N/A	443
Total Potable	**13,322**	**9,306**	**13,322**	**9,306**
Non-Potable Irrigation Water				
Municipal & Industrial (all[1])	5,169	5,829	5,169	5,829
Agriculture	121	4,090	121	4,090
Other (Non-Potable Line Loss)	N/A	496	N/A	496
Total Non-Potable Irrigation Water	**5,290**	**10,415**	**5,290**	**10,415**
Total District Demand	**18,612**	**19,721**	**18,612**	**19,721**

1) Breakdown between Single- and Multiple-Family Dwellings not available

a. Projected Low Income Housing Demands

Camrosa Water District boundaries overlap with four jurisdictions: the City of Camarillo, unincorporated areas of Ventura County, the City of Thousand Oaks, and CSUCI. Of the approximately 31 square miles encompassed by the Camrosa Water District's boundaries, about 7 square miles are within the City of Camarillo, 22 square miles lie in unincorporated Ventura County, and 1.5 square miles are attached to the City of Thousand Oaks. Each of these municipalities has a general plan with housing element classifications.

Ventura County, the City of Camarillo, and the City of Thousand Oaks all use the Department of Housing and Urban Development income criteria for the Oxnard–Thousand Oaks–Ventura Metropolitan Statistical Area (MSA) in determining eligibility for affordable housing programs. Senate Bill 1087 requires that water use projections of a UWMP include the projected water use for single-family and multi-family residential housing for lower income households as identified in the housing element of any city, county, or city and county in the service area of the supplier. None of the housing elements of the *General Plans* of Ventura County, the City of Camarillo and the City of Thousand Oaks identifies the number or specific location of low income households in the City. Nor do the housing elements in any of these plans project the number or location of low-income households in the future. For this reason, it is not possible to project water use for lower income households separate from overall residential demand. The District will not deny or condition approval of water services applied for by a proposed development that includes low-income affordable housing units, unless one of the following occurs:

- the District specifically finds that it does not have sufficient water supply
- the District is subject to a compliance order issued by the State Department of Health Services that prohibits new water connections

- the applicant has failed to agree to reasonable terms and conditions relating to the provision of services.

Within the Camrosa Water District boundaries, there are currently no single or multi-family residential tracts designated as low-income housing. There are three large-plan developments scheduled for completion by 2025, at which point the District will near full build-out. Of the residential tracts that are planned for development, none are designated as low-income housing. Projections are shown in Table 8 below.

Table 8. Low-Income Projected Water Demands

Low Income Water Demands	2015	2020	2025	2030	2035
Single-family residential	0	0	0	0	0
Multi-family residential	0	0	0	0	0
Total	0	0	0	0	0
Units of Measure (AF/Y)					

2. Additional Water Uses

Surplus non-potable water is delivered to users outside the District Boundaries and is accounted for in Table 9 below. These sales include surplus recycled water from the Camrosa CWRF sold to nearby agricultural users and non-potable irrigation water sold to the Pleasant Valley County Water District. Sales of surplus water are considered interruptible to satisfy demands within the District's service area. Table 9 reflects the excess non-potable supplies available for delivery to satisfy demand outside the district after all District non-potable demands have been met. In past years, all surplus non-potable irrigation water has been sold. For the foreseeable future it is expected that all surplus non-potable water will continue to be sold to agricultural use outside the District.

Camrosa anticipates no demand related to saline intrusion barriers or groundwater recharge.

Table 9. Deliveries to Other Agencies (AF/Y)

Name of Agency	2005	2010	2015	2020	2025	2030	2035
Pleasant Valley CWD	5,503	4,880	6,433	5,829	5,541	5,138	6,280
Units of Measure (AF/Y)							

Table 10 sums the total water uses expected within the District over the next 25 years.

Table 10. Total Water Use (AF/Y)

Water Use	2005	2010	2015	2020	2025	2030	2035
Total Water Deliveries within District (from Tables 4, 6, 7)	15,164	15,025	18,453	19,237	19,711	19,721	19,721
Sales to Other Water Agencies (from Table 9)	5,503	4,484	6,433	5,829	5,541	5,138	6,280
Additional Water Use	0	0	0	0	0	0	0
Total	**20,667**	**19,509**	**24,886**	**25,066**	**25,252**	**24,859**	**26,001**
Units of Measure (AF/Y)							

Table 11 below details the demand projections provided to Calleguas Municipal Water District, Camrosa's sole wholesale potable water supplier. Both the existing and projected water volumes reflect a decrease in reliance on State Water Project water over the planning period. This is mainly due to the District's current and continued efforts to expand the non-potable distribution system within the District.

Table 11. Retail Agency Demand Projections Provided to Wholesale Suppliers

Wholesaler	Contracted Volume	2010	2015	2020	2025	2030	2035
Calleguas Municipal Water District	7,900	**5,639**	**5,448**	**5,017**	**4,878**	**4,878**	**4,878**
Units of Measure (AF/Y)							

C. Baselines and Targets

LAW

10608, 12 (b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period, ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water us, reported in gallons per capita per day and calculated over a five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

10608.22 Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

The Water Conservation Act (SBX7-7) of 2009 directs urban retail water suppliers to set both interim 2015 and final 2020 urban water use targets with goals of achieving a 10 percent per capita reduction by 2015 and 20 percent by 2020. Additionally the Act requires urban water suppliers to define a 10 to 15 year base (or baseline) period for water use that will be used to develop their target levels of per capita water use.

Water suppliers must also calculate water use for a 5 year baseline period, and use that value to determine a minimum required reduction in water use by 2020. The longer baseline period applies to a water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water.

There are four overall steps a water supplier must complete to meet the 2010 UWMP requirements identified in the Water Conservation Bill of 2009:

1. Step 1: Determine Base Daily Per Capita Water Use

Base daily per capita water use, measured in GPCD (gallons per capita per day), is established for an initial period of time, which is referred to as the 10-to-15-year base period. Three technical methodologies have been developed to support a water supplier in determining its base daily per capita water use:

- Methodology 1 – Gross Water Use
- Methodology 2 – Service Area Population
- Methodology 3 – Base Daily Per Capita Water Use

The percentage of non-potable water used to satisfy irrigation demands to total water deliveries for 2008 is used to determine the number of continuous years an urban water supplier may use in calculating average GPCD. This provides some flexibility as well as acknowledges the advances of water suppliers that have already begun using recycled water to reduce potable demands. Table 12 below summarizes the 2008 total and non-potable irrigation water deliveries for the District and defines the continuous 10-to-15 and 5 year base periods that will be used.

Table 12. Base Period Ranges			
Base	**Parameter**	**Value**	**Units**
10 to 15 year base period	2008 total water deliveries	18,387	AF
	2008 total volume of delivered non-potable irrigation water	5,341	AF
	2008 non-potable irrigation water as a percent of total deliveries	29	%
	Number of years in base period range	10	years
	Year beginning base period range	1998	
	Year ending base period range	2007	
5 year base period	Number of years in base period	5	years
	Year Beginning base period range	2003	
	Year ending base period range	2007	
Units of Measure:	**AF/Y**		

If an urban retail water supplier's recycled water deliveries for 2008 meet or exceed 10 percent of total deliveries, then the supplier may choose a longer continuous base period of up to 15 years ending no earlier than December 31, 2004 and no later than December 31, 2010. Non-potable irrigation water represents the combined deliveries of two separate non-potable systems. Camrosa has relied upon this resource to offset the use of imported SWP water for the past nine years, will continue to do so and has general plans to further expand the non-potable irrigation water distribution system in order to offset potable SWP water imports. As demonstrated in Table 12, non-potable irrigation water deliveries for the District in 2008 comprised 29 percent of total deliveries, exceeding the DWR requirement for a 10-15 year base period. Camrosa has chosen to use a ten-year period – 1998-2007 – as its base period to determine current GPCD and future GPCD targets.

Gross Water Use

For purposes of determining GPCD in this Plan, the District determined that Gross Water Use constitutes all potable water that entered the potable distribution system, including agricultural deliveries. In order to align with the requirements of other agencies requiring similar information, data was analyzed and calculated on the basis of a fiscal year (July 1 – June 31).

Service Area Population

Section 2.F.2 describes the methodology used and the process followed to arrive at District population for both past and future years. The Service Area boundaries are represented in that section in Figure 2.

Base Daily Per Capita Water Use

The District has determined the optimal baseline period is 10 fiscal years ranging from 1998 through 2007. Table 13 below provides the annual Gallons per Capita per Day (GPCD) calculation as a ratio of Daily Gross Water Use and Service Area Population for each baseline year from 1998 through 2007 with an average baseline GPCD of 454 gallons/person/day. Table 14 below details the 5 year base GPCD use for the years of 2003 through 2007 with an average 5 year baseline of 435 gallons/person/day.

Table 13. Base Daily Per Capita Water Use: 10-15 Year Range				
Base Period Year		Distribution System Population[1]	Daily System Gross Water Use (MGD)	Annual Daily per Capita Water Use (GPCD)
Sequence Year	Calendar Year			
1	1998	22,197	8.472	382
2	1999	22,659	10.513	464
3	2000	22,820	11.417	500
4	2001	22,820	11.194	491
5	2002	23,219	12.151	523
6	2003	23,475	11.607	494
7	2004	23,932	11.17	467
8	2005	25,987	10.049	387
9	2006	26,682	10.195	382
10	2007	26,809	11.921	445
Base Daily Per Capita Water Use				**454**

[1] Source: Ventura County RMA derived from California DOF and US Census Bureau Data overlaid with District parcels as described in Section 2

2. Step 2: Determine Urban Water Use Target

Retail water suppliers can choose from four compliance methods as follows:

- Method 1 – Eighty percent of the water supplier's baseline per capita use
- Method 2 – Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and commercial, industrial, and institutional uses
- Method 3 – Ninety-five percent of the applicable state hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan
- Method 4: Requires reduction of Base Daily Per Capita Water Use a specific amount for different water sectors:
    - Indoor residential water use to be reduced by 15 GPCD or an amount determined by use of DWR's "BMP Calculator".
    - A 20 percent savings on all unmetered uses.
    - A 10 percent savings on baseline CII use.
    - A 21.6 percent savings on current landscape and water loss uses.

The District has chosen to use method 1 (80% of average base daily per capita water use) in determining its preliminary urban water use target. From Table 13 above the Base Daily Per Capita Water Use is 454 GPCD. Therefore the District's preliminary Urban Water Use Target is 363 GPCD, as follows:

80% X 454 GPCD = <u>363 GPCD</u>

3. Step 3: Confirm Urban Water Use Target

Step 3 confirms the water supplier's urban water use target determined in Step 2. It compares the urban water use target determined in Step 2 to a 5-year base daily per capita water use value to confirm that the urban water use target has met a minimum reduction established by statute.

In determining the 5 year base period, an urban water supplier may choose a continuous base period ending no earlier than December 31, 2007, and no later than December 31, 2010. Table 14 below details the 5 year base GPCD use for the years of 2003 through 2007 with 5-year average baseline of 435 gallons/person/day.

Table 14. Base Daily Per Capita Water Use: 5-Year Range

Base Period Year		Distribution System Population	Daily System Gross Water Use (MGD)	Annual Daily per Capita Water Use (GPCD)
Sequence Year	Calendar Year			
1	2003	23,475	11.607	494
2	2004	23,932	11.170	467
3	2005	25,987	10.049	387
4	2006	26,682	10.195	382
5	2007	26,809	11.921	445
			Base Daily Per Capita Water Use	**435**

If an urban retail water supplier's base daily per capita water use calculated using the 5-year base period is 100 GPCD or less, then the supplier is exempt from the 5 percent minimum required reduction. However, the District exceeds this amount and must therefore calculate 95 percent of the base daily per capita water use in Table 13 to confirm its urban water use target:

.95 X 435 = 413 GPCD

From Step 2 above, the urban water use target is less than 95% of the base daily per capita water use. Therefore the District's Urban Water Use Target is confirmed to be:

363 GPCD

4. Step 4: Determine Interim Urban Water Use Target

As previously mentioned, SBX7-7 also directs urban retail water suppliers to set an interim urban water use target with a goal of achieving a 15 percent per capita reduction by 2015. The interim urban water use target is one-half the sum of the urban water use target (from step 2) and the base daily per capita water use (from step 3). The District's interim target is 399 GPCD, as follows:

(363 + 435) ÷ 2 = 399 GPCD

5. Conclusion

Based on the methodology described above, the District has already met its Urban Water Use Target, as GPCD in 2010 was 309. Because 2010 was such an abnormally wet year, GPCD for 2009 was calculated, and found to be 363. The District will continue to monitor GPCD in the years ahead, and will report the District's GPCD to DWR, as required by California Water Code 10608.40, when the standardized forms for doing so become available. While the District has already achieved a decreasing trend in GPCD usage for the last several years due in large part to shifting irrigation demand off of the potable distribution system and through concerted conservation efforts, some of that has also been a result of response to significant regional drought and the general economic downturn. Between continued education and conservation efforts, and the current general strategy of offsetting potable water use with non-potable water through expanding the non-potable distribution system, the District expects GPCD to not only maintain this current level of GPCD, but in addition continue to decline farther below the urban water use target in the future. Section 4F, Future Water Projects, describe several options for expanding the non-potable distribution system to meet the SBX7-7, 2015 and 2020 reduction goals.

Section 4 System Supplies

LAW

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.; an indication of whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management; a copy of the plan of authorization.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

For those basins for which a court or the board has adjudicated the rights to pump groundwater: a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

For basins that have not been adjudicated: information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

1631(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Water Supply Sources

The current sources of water supply for the customers and properties within the Camrosa Water District service area are a complex mix of public and private sources including imported SWP water; public and private wells in three groundwater basins; surface water diverted from Conejo Creek and recycled water from two wastewater treatment facilities. A single parcel, particularly agricultural parcels, may have more than one source of supply.

Approximately 85% of the water supply for Camrosa Water District residents and property owners is provided by Camrosa Water District. The remaining supply is provided by property owners who own their own wells. During the drought period that peaked in 1990, Camrosa Water District found that agricultural customers moved from public to private water sources to obtain sufficient supplies and to avoid restrictions imposed by public water supply agencies. Since that experience, the District has adopted a more

comprehensive approach to water resource planning with many of the District's water analyses accounting for both public and private sources and demands.

Having multiple water sources gives the District considerable flexibility and improved reliability when compared to other nearby purveyors. Sources available to Camrosa Water District include imported SWP water from Metropolitan Water District of Southern California (imported through Calleguas Municipal Water District), local groundwater and non-potable irrigation water from various sources.

Camrosa has wells in the Tierra Rejada, Santa Rosa, Pleasant Valley and Perched groundwater basins. The Woodcreek well in the Pleasant Valley groundwater basin was completed in 1996. As it is an injection/extraction well, in addition to providing potable ground water can also be operated as a small, internal aquifer storage and recovery facility that can inject discounted imported water in years when the water is available.

Non-potable irrigation water supplies include surface water diverted by the Conejo Creek Project as well as recycled water from the Camrosa Water Reclamation Facility and, in the near future, recycled water from the Camarillo Sanitation District. These sources have been developed to augment the supply for expansion of the District's non-potable distribution system. The agreement regarding Camrosa's primary access to HCWWTP discharge in Conejo Creek was executed in 1994. This 25-year contract will expire in 2019. Camrosa is currently in the process of renegotiating the agreement to retain rights to HCWWTP recycled water product.

Table 15 presents the project water supplies available to the District over the next 25 years.

Table 15. Water Supplies - Current and Projected (AF/Y)

Water Supply Sources	2010	2015	2020	2025	2030	2035
Purchased from wholesaler						
Calleguas MWD	5,639	7,900	7,900	7,900	7,900	7,900
Supplier produced groundwater						
Tierra Rejada Basin	428	928	928	928	928	928
Santa Rosa Basin	2,312	3,530	3,530	3,530	3,530	4,650
Pleasant Valley Basin	807	860	935	935	935	935
Perched Zone	0	1,120	1,620	1,620	1,620	1,620
Transfers In	0	0	0	0	0	0
Exchanges In	0	0	0	0	0	0
Non-Potable Irrigation Water						
Conejo Creek/HCWWTP (Surface)	8,853	10,667	10,667	10,667	10,667	10,667
Camrosa WRF (Recycled)	1,522	1,696	1,870	2,044	2,044	2,044
CamSan WWTP (Recycled)	0	440	680	1,070	1,430	1,825
Desalinated Water						
Other	0	0	0	0	0	0
Total	**19,561**	**27,141**	**28,130**	**28,694**	**29,054**	**30,569**

A. Imported Water

Imported SWP water has been used to supplement the available local water supplies since 1965. Camrosa Water District has 12 active water turnouts that receive water by gravity feed from Calleguas Municipal Water District's Oxnard-Santa Rosa Feeder transmission lines. Blending imported water with local groundwater supplies has improved the water quality significantly and allows the use of groundwater that does not otherwise meat DPH water quality requirements. Camrosa blends imported water with

groundwater to control the level of nitrates and Total Dissolved Solids (TDS) that would otherwise limit the use of groundwater.

Camrosa Water District purchases of imported water peaked in 1990, a drought year when the District purchased 12,900 AF of imported water from Calleguas MWD. Faced with dramatically rising water costs, several large agricultural customers shifted from Camrosa to alternative private sources such as wells or private surface water diversions. Even though the drought continued into early 1992, imported water purchases in 1991 totaled only 7,100 AF. Since 1991, imported water purchases have stayed below 8,900 AF/Y with the exception of FY 1998-99, which was a particularly dry year locally.

During the 1986-1992 droughts, the State Water Project was not able to meet the total water demand of all its contract member agencies. Calleguas Municipal Water District, like all of Metropolitan Water District member wholesalers, instituted a rationing program to reduce purchases by 30 percent. Calleguas chose to charge significant surcharges for water purchases greater than 80 percent of the 1989-90 domestic levels and greater than 50 percent of the 1989-90 agricultural levels. Since the last major drought, Metropolitan Water District and its member wholesale purveyors such as Calleguas MWD have developed local water sources to insulate their customers from such large cutbacks during future droughts. Recent projects completed by Calleguas MWD include a treatment plant to treat water stored in Lake Bard, the Las Posas Aquifer Storage and Recovery well field, an interconnection with the Los Angeles Department of Water and Power, and Camrosa's Conejo Creek Diversion Project.

In the 20 years since the end of the drought, imported water purchases have averaged only 8,110 AF/Y. Development in the late 1990s and early 2000s increased potable consumption, bringing the average of the second half of that 20-year period to 9,025 AF/Y.

At the same time, recent conversions of potable irrigation demand to the non-potable distribution system, such as the 2008 conversion of Leisure Village, have reversed the growth trend. In 2010, Camrosa purchased a total of 6,282 AF of imported water. Figure 6 below summarizes potable water purchases for the period 2000 through 2010. Taking into account that the purchase spike in FY2007-08 was the result of one of the driest years on record, it is apparent there is a decidedly downward trend in the purchases of imported water. It is not expected that future imported water purchases will exceed 7,900 AF/Y in even the driest years.

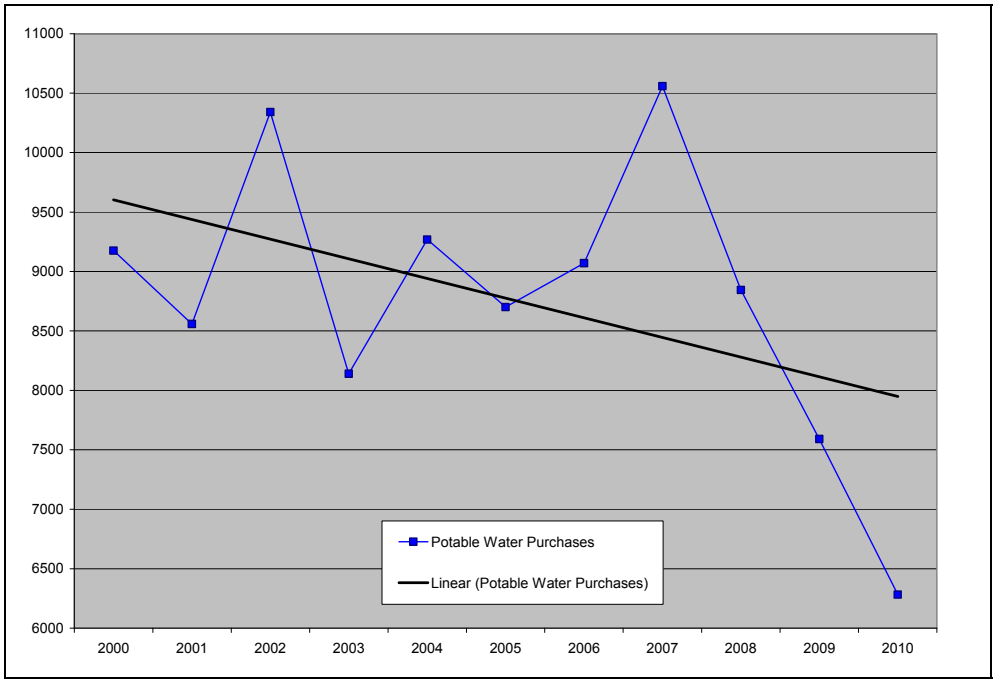

Figure 6 – Imported Water Purchases 2000-2010

Table 16 presents the existing and planned water supplies from Camrosa's wholesaler, Calleguas Municipal Water District, through 2035.

Table 16. Wholesale Supplies: Existing and Planned Sources of Water (AF/Y)

Wholesale Source	Contracted Volume	2015	2020	2025	2030	2035
Calleguas Municipal Water District	7,900	7,900	7,900	7,900	7,900	7,900

B. Groundwater

Camrosa Water District covers three major groundwater basins including Tierra Rejada Basin in the eastern portion of the District, the centrally located Santa Rosa Basin and the Pleasant Valley Basin in the western portions of the District. A fourth groundwater source is the shallow perched groundwater aquifer of poorer quality at the base of the Conejo and Santa Monica Mountains adjacent to the Pleasant Valley Basin. Figure 7 below represents graphically the groundwater basins available to the District. Detailed descriptions of these groundwater basins follow the figure, after which pumping history and projections are provided.

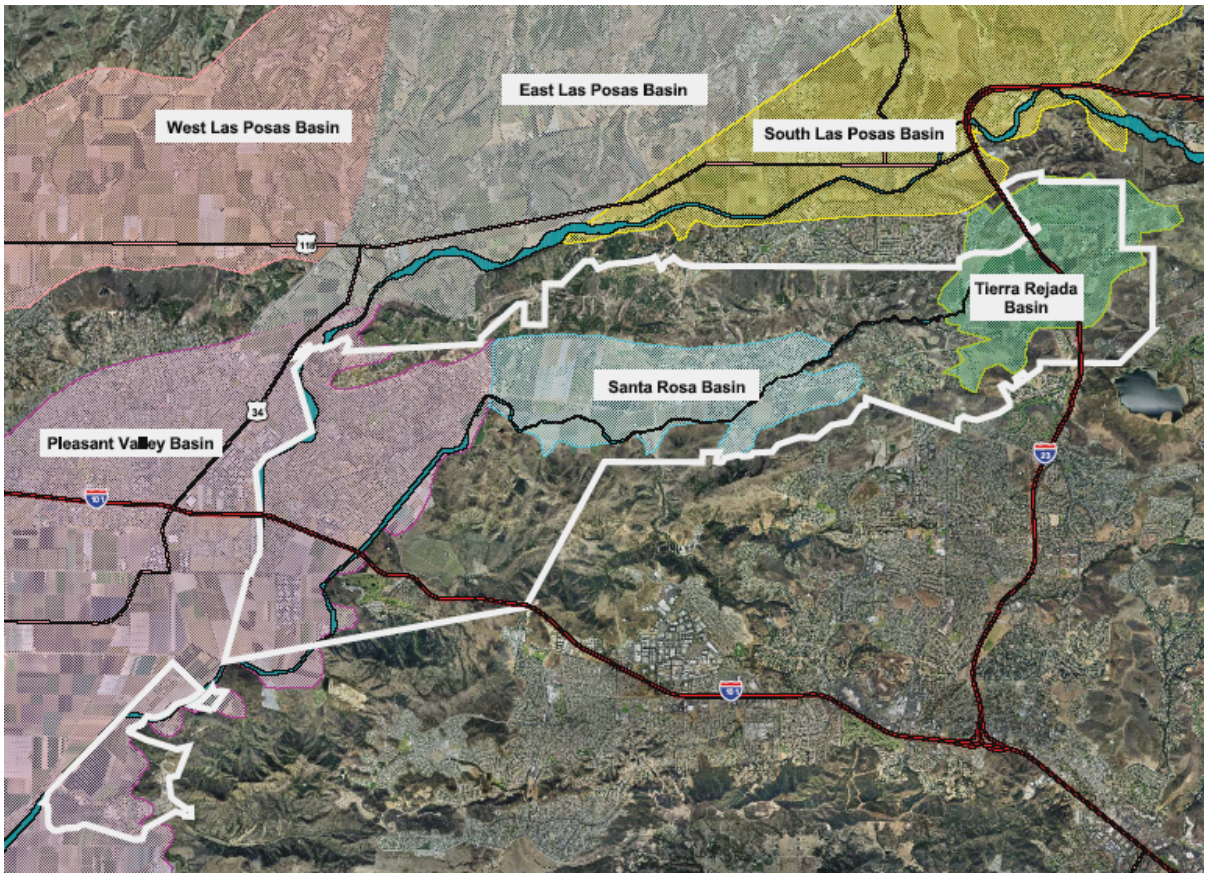

Figure 7 – Groundwater Basins Surrounding the District

1. Tierra Rejada Basin

The Tierra Rejada Basin is about 1,900 acres in size. According to J.P. Schaaf's 1998 MA thesis, *Hydrogeology of the Tierra Rejada Groundwater Basin*, the Tierra Rejada Basin is approximately 1,900 acres in size and is recharged by a watershed area of approximately 4,500 acres.

Rainfall provides about 85% of basin water supply. The peripheral drainage area is underlain by non-water bearing rocks or sediments. Groundwater is stored primarily in sandstones and conglomerates with a matrix predominantly composed of volcanic rock of the Topanga Formation, and in fractured basalts and basalt breccias of the Conejo Volcanics. Bedrock formations of marine and non-marine origin present in the basin area include the Saugus Formation, Las Posas Sand, Monterey Shale, Topanga or Calabasas Formation, Conejo Volcanic, and Sespe Formation. Surficial deposits generally overlay the bedrock formations in the basin and include alluvium, and colluvium. The rock sequence in which fresh groundwater is present ranges in age from Oligocene (38 million years ago) to Recent.

Within the basin, the oldest Sespe Formation is water-bearing and known to generally underlie the Conejo Volcanics. The Sespe Formation outcrops on the northern and southern ridges. The compacted formation is mostly sandstone of various colors and contains metavolcanic and quartzitic rocks. This base formation is estimated to be a mile thick. The Conejo Volcanics underlie the entire basin south of the Semi fault and were formed during the Miocene (25 to 5 million years ago) period. Thickness estimates range from 1,000 to 2,000 feet, with deeper wells penetrating fractured upper layers providing ample rates of water extraction. The upper portion has been described as predominantly andesitic-basaltic flows and breccias; gray, maroon-gray and brown aphantic porphyritic rocks, vaguely stratified, flows range from platy to massive,

coherent but much fractured; deposited as flows and breccias; contain some epiclastic volcanic sediments and minor reddish, scoriaceous pyroclastic horizons; probably emplaced sub aerially" (Dibblee, 1992).

Camrosa's well encountered the fractured volcanics at 290 foot depth where brown sandstones of the overlying Topanga formation ends and the gray Conejo Volcanics begins. The concrete well is sealed to 300 feet and produces water from from 300 to 620 feet below the surface.

The Topanga Formation overlying the Conejo Volcanics was deposited during the same era. Rocks of the formation were deposited during a period of marine exposure and consist mainly of medium to course grained sandstone and volcanic pebble conglomerate. Marine influence is also seen in Monterey shale outcrops in the hills south of the basin and along the Semi fault within the northwest area of the basin. Some Los Posas sand of marine origin lies on the south side of the fault. Also in contact with the fault is the Saugus formation which runs toward the northwest. Finally, the main basin is covered by younger sediments of Holocene era (10,000 years ago to the present), with recent alluvium accumulation along stream courses with a maximum thickness of 50 to 80 feet in the central basin.

The water table elevation decreases from approximately 600 feet mean sea level (MSL) in the eastern portion of the basin to 450 feet in the western portion of the basin. The saturated thickness increases from east to west across the basin. In the north central portion of the basin the aquifer reaches a maximum thickness of approximately 700 to 800 feet.

In December 2009, Norman N. Brown, PhD, P.G., conducted a second analysis of the Tierra Rejada Basin, *Groundwater Geology and Yield Analysis of the Tierra Rejada Basin*, on behalf of the District. Brown concluded:

- Groundwater levels observed over a long-term base period including two wet-dry climatic cycles shows that the average groundwater production was within the basin yield over the period 1944-1996
- Current and recent conditions indicate that existing production and possibly new production can be managed within basin yield. It is unknown if production from a proposed new District well would result in total basin production greater than or less than the historic average over the base period 1944-1996
- An increase in basin yield may be possible by active management of basin storage and pumping distribution
- Limited water quality data for the basin show increases in TDS, chloride and sulfate during the last 10 years; concentrations are within drinking water standards. Nitrates concentrations in 2008 exceeded the drinking water standards for four wells in the central portion of the basin

Inflows and outflows for the Tierra Rejada Basin currently total about 6,200 AF in an average rainfall year. Current pumping rates of 1,900 AF/Y for private agricultural wells and an additional 428 AF/Y for Camrosa Water District brings the current groundwater production to approximately 2,330 AF/Y for the Tierra Rejada Basin. The District currently operates one well in the Tierra Rejada basin and has shown a gradual reduction in pumping from 2006 to 2010. Construction of a second well in the basin is being considered as part of the District's Capital Improvement Plan. This second well would augment production in the basin by 500 AF/Y starting in 2015, which would bring total production estimates to 928 AF/Y through 2035. Construction of this second well within the basin has been postponed until the Tierra Rejada Groundwater Management Plan is completed, which is scheduled to be by the end of 2012.

2. Santa Rosa Basin

The Santa Rosa Groundwater Basin underlies about 3,800 acres (5.9 square miles) and is wholly contained within the District boundaries. It is a broad, elliptical, and flat-bottomed valley. The dominant structural element of the basis is the Santa Rosa Syncline, a downward trending fold lying east to west and extending from the east end of Tierra Rejada Valley westward into Pleasant Valley. Several major faults

occur in the Santa Rosa Basin, the largest of the geologic strata of 500 to 5,000 feet along the northern edge of the basin. The other major fault, the Bailey Fault, runs northeast to southwest near the western end of the basin, and separates the northwestern third of the basin from the rest of the basin. The Bailey Fault is geologic and political boundary within the basin.

Groundwater in the Santa Rosa Basin is extracted from sediments of Holocene, Pleistocene, Upper Pleistocene, and Miocene age. There are four major water-bearing zones within the basin; conglomerate beds within the Conejo Volcanics, conglomerate and sandstone within the Santa Margarita Formation, sand and gravel in the Saugus Formation, and alluvium. Structurally, the Conejo Volcanics underlie the basin and form the base on which the formations lie. The Santa Margarita Formation is peculiar to the area of the basin lying east of the Bailey Fault and lies atop the Conejo Volcanics. Over the Santa Margarita Formation lies a confining layer and over that, the alluvium. The area west of the Bailey Fault consists primarily of the Saugus Formation, a combination of Fox Canyon and San Pedro Formations. The Saugus Formation evident within the Santa Rosa Basin is the result of an outcropping of the larger Fox Canyon and San Pedro Formations west of the valley. This outcropping pinches off at the western end of the valley and then fans out into the valley, stopping at the Bailey Fault barrier. Due to the pinching off of the Saugus Formation, the Santa Rosa Groundwater Basin is considered to be a confined basin, separate from the larger western water bearing zones.

In 1975, the California Department of Water Resources (DWR) estimated the total groundwater storage capacity of the Santa Rosa Basin to be 94,000 AF. In 1994, a detailed groundwater basin model was developed in conjunction with the implementation of the Santa Rosa Groundwater Management Plan (see Appendix F). That model estimated the groundwater capacity to be 170,000 AF and recoverable storage to be about 69,000 AF. While the model estimated the basin safe yield at 4,700 AF/Y based on well records for 1989 to 1995, the SRGMP Council adopted a more conservative safe yield estimate of 4,200 AF/Y since it was not readily apparent at the time that inflows would be sustained at the rate assumed in the model. In his 1998 dissertation, however, Schaaf estimated the outflow from the Tierra Rejada Basin into the Santa Rosa Basin was 540 AF/Y, which is significantly higher than the 300 AF/Y assumed in the 1997 model.

Even by the most conservative estimates, Santa Rosa Basin has additional yield not currently utilized and the basin remains full even during the driest of years. The presence of nitrates above acceptable drinking water regulations require that Santa Rosa Basin groundwater be blended with imported water at an average ratio of between 1.5:1 and 2:1 (imported) to improve its quality before being injected into the potable distribution system. The Conejo Wellfield, where Santa Rosa Basin groundwater for potable use is pumped, is supplied through one imported water meter station (MS12), the upper capacity of which is 6,000 GPM. Recent combined pumping capacity of the four wells at the Conejo Wellfield is upwards of 3,300 GPM, meaning that the District is unable to utilize the full capacity of the Conejo Wellfield pumps. With the addition of the desalination facility, such as that discussed in Section 4.D.3, more water will be extracted from the basin. Additional yield may also be achieved by producing water for non-potable purposes in order to offset the significant irrigation demand now being met by potable water.

In the westernmost one-third, the Santa Rosa Basin overlies the Fox Canyon Aquifer. In this area, the Fox Canyon Groundwater Management Agency (FCGMA) has jurisdiction over the Santa Rosa Basin. The Fox Canyon GMA has established a program to bring basin pumping and recharge into balance within the over-drafted Fox Canyon Aquifer. Allocations have been established for each well based upon historical pumping records for 1985 to 1989. The allocations are reduced by 5% every five years until they reach 75 percent of historical extraction levels in the year 2010. An alternative to historical allocations has been adopted for agricultural pumpers. Agricultural wells are allowed to pump more than their historical allocations as long as the water pumped does not exceed the required irrigation water at an 80 percent efficiency rate for the crop under cultivation.

While Camrosa Water District does not have any wells within the lower Santa Rosa Basin, each of the private well owners report their pumped volumes to the GMA semiannually. Because high penalties are applied to extractions above allowed levels, pumpers normally stay within their allocations.

3. Pleasant Valley Basin

The Pleasant Valley basin is one of the seven major basins within FCGMA's jurisdiction and underlies the western portion of the Camrosa Water District. The Pleasant Valley Groundwater Basin underlies Pleasant Valley in southern Ventura County. The basin is bounded on the north by the Camarillo and Las Posas Hills and the south by the Santa Monica Mountains. The eastern boundary is formed by a constriction in Arroyo Santa Rosa. The basin is bounded on the west by the Oxnard subbasin of the Santa Clara River Groundwater Basin. Ground surface elevations range from about 15 feet in the west to about 240 feet above sea level in the east. The upper stratum of the Pleasant Valley Basin is composed of recent and Upper Pleistocene alluvial sands, gravels, silts and clays. The aquifers in this zone are generally unconfined and vary in thickness from a few feet to several hundred feet. The permeable lenses yield little water to wells owing to rapid thinning and predominance of fine-grained materials. The shallow aquifers in the Pleasant Valley Basin are equivalent, but not connected with, the Oxnard aquifer lying to the West. Underlying the Pleasant Valley area at depths from 400 to 1500 feet is a prominent zone of marine sands and gravels known as the Fox Canyon Aquifer. The Fox Canyon Aquifer is the lower most member of the Pleistocene San Pedro formation and forms the major producing zone of the Pleasant Valley Ground water Basin. The aquifer is confined and is 100 to 300 feet thick. Permeable deposits within the upper Santa Barbara Formation underlie the Sand Pedro Formation and contain fresh groundwater of only minor importance.

Camrosa operates one well (Woodcreek) within the basin. In 1975, DWR estimated the total groundwater storage capacity of the Pleasant Valley Basin to be 1,886,000 AF. Between 198,000 and 247,000 AF are recoverable. Although the perennial yield of this basin has not yet been determined, in 1999 it was estimated the applied water recharge of the basin to be approximately 11,400 AF while the average annual extractions was estimated at 18,500 AF.

The Fox Canyon GMA's allocation for the Woodcreek Well is based on an allowance for the residential development overlying the Fox Canyon Aquifer at a rate of 1 acre-foot per acre of land developed. As of 2010, Camrosa's allocations are approximately 807 AF/Y. Due to additional development within the District, this allocation is expected to increase to approximately 916 AF/Y by the end of 2014 and then remain relatively stable through 2035. Because this is an annual allocation, water not pumped cannot be carried over from one year to the next.

The District has also operated the Woodcreek Well as an aquifer storage and recovery facility whenever surplus state water is available during the winter months. It is not likely, however, that any significant additional quantities of water will be injected until such an enterprise becomes economical again.

4. Perched Aquifer

The Perched Aquifer at the base of the Conejo Hills is part of the regional Pleasant Valley Basin, with the specific distinction of being categorized only as an Upper Aquifer System, unlike the Pleasant Valley Basin, which includes a Lower Aquifer System (LAS) and an Upper Aquifer System (UAS) as well as shallow aquifers. The Perched Aquifer is locally semi-confined, with local groundwater levels characteristics that correspond with semi-perched conditions. The aquifer is lenticular and laterally discontinuous in the basin margins. It is designated as the uppermost water-bearing unit in hydraulic connection with surface and associated stream flow of Calleguas and Conejo creeks.

The Bailey Fault is an extension of the Simi-Santa Rosa fault zone which separates the Perched Aquifer from the Pleasant Valley Basin system. Basin sediments, which lie unconformable on bedrock, consist primarily of Tertiary Conejo volcanic rocks. The subsurface geometry of the bedrock surface is associated with truncation of the lower aquifer system along a zone roughly contiguous with the surface location of Calleguas Creek. Lithologic relationships between wells in this vicinity indicate that portions of the basin close to the mountain-front are geologically irregular and likely disrupted by faulting. None of the bedrock units, whether sedimentary or volcanic, are meaningful sources of groundwater production, except for local water supply from fractured volcanics in some mountain-front areas.

From the late 1930s through 1979, Camarillo State Hospital, with a population of nearly 1,000 patients, relied exclusively on the Perched Aquifer to satisfy the irrigation demands of its 634 acres and all potable demands of the hospital and onsite residences. When California State drinking water quality standards changed in 1979 and the aquifer's constituent levels exceeded the newest regulation, the State contracted with Camrosa Water District to supply water to the site. The supply has not been used regularly in the interim.

Water quality tests have shown that the quality of the water in the perched aquifer has not improved in the intervening years. Camrosa has determined, however, that the water could be put to beneficial use if desalinated. Accordingly, the District has entered into an agreement with the California State University – Channel Islands, the new owner of the former state hospital site, to lease a perched zone well owned by the University. Plans are underway to develop a project to rehabilitate the well and begin desalinating the brackish water contained in the perched zone as an alternate supply for the University Campus. It is expected that by 2013, a 1MGD desalination facility, the Round Mountain Water Treatment Plant (RMWTP), will be fully functional and delivering a new supply of potable water within the District.

Another existing well within District boundaries taps the Perched Aquifer. The Adhor Well, which is currently non-operational, is situated on a large agricultural parcel just south of US Highway 101. That parcel is slated to be developed into a mixed commercial/residential subdivision called the Conejo Creek Development Project. When development begins, prior to 2020, the Adhor Well will likely be dedicated to Camrosa Water District. Based off of historical pumping records, the District expects the Adhor Well to make and additional 500 AF/Y available. The well's condition will have to be examined, the water quality analyzed and the aquifer yield/well drawdown tested prior to determining whether this well would be added to the potable or non-potable distribution system.

Due to the fact that the Perched Aquifer has not been used as a source to supply significant volumes of water for over thirty years, it is difficult to know how the aquifer will respond to renewed extraction at the proposed volumes.

5. Groundwater Pumping History and Projections

Table 17 provides a summary of groundwater pumping for the 5-year period ending in 2010.

Table 17. Groundwater Pumped 2006-2010 (AF/Y)

Basin	Metered or Unmetered	2006	2007	2008	2009	2010	Avg.
Tierra Rejada	M	740	510	504	459	428	528
Santa Rosa	M	3,161	3,162	4,105	3,159	2,312	3,180
Fox Canyon	M	544	814	820	807	807	N/A[1]
Perched Aquifer	M	0	0	0	0	0	0

1) The Fox Canyon Allocation is determined every year by the FCGMA. This real number will be used in supply projections, and as an average is not used in to calculate future Fox Canyon supplies, an average was not calculated.

Years 2006-2010 contained both very dry and very wet years, as well as two average rainfall years, and little growth was experienced within the District during that time. Therefore, an average of the last five years (4,466 AF) was used as a base estimate of the volume of groundwater projected to be pumped moving forward through the planning horizon.

Table 18 summarizes projected pumping, in 5-year increments, for the period 2015 to 2035. The 2015 pumping projections incorporate the increased Fox Canyon GMA allocation, the completion of the RMWTP

to put brackish Perched Aquifer water to beneficial use, and the construction of a second well in the Tierra Rejada Basin. By 2020, both the Fox Canyon GMA allocation and the Perched Aquifer yield are projected to increase, the latter as a result of rehabilitating the Adhor Well. The construction of a desalination facility to improve supplies in the Santa Rosa Basin is currently in the conceptual stages and is therefore slated for the end of the planning period, in 2035.

Table 18. Groundwater Projected to be Pumped (AF/Y)

Basin	2015	2020	2025	2030	2035
Tierra Rejada	928	928	928	928	928
Santa Rosa	3,530	3,530	3,530	3,530	4,650
Fox Canyon	860	935	935	935	935
Perched Aquifer	1,120	1,620	1,620	1,620	1,620
Total	**6,438**	**7,013**	**7,013**	**7,013**	**8,133**
% of Total Water Supply	**23.72%**	**24.87%**	**24.05%**	**23.44%**	**25.32%**

Groundwater will remain an important water supply, representing roughly 25 percent of the total supply used within the District.

C. Transfer or Exchange Opportunities

The only transfer currently pursued by Camrosa is a groundwater pumping credit exchange between local agencies within the Fox Canyon Groundwater Management Agency Service Area boundaries. Although this transfer is not on a large scale, it represents a significant volume of water to Camrosa. In keeping with full explanation of Camrosa's water resources and supplies, this small, local transfer is included herein.

1. Pumping Allocation in the Fox Canyon Aquifer

As Camrosa Water District accepts new properties for potable service, existing ordinances require that groundwater wells on the property be abandoned and water rights be dedicated to the District. If the well is located in the Fox Canyon Aquifer, historical allocations in the aquifer can be transferred to the District. The District's pumping entitlement in the Fox Canyon Groundwater Basin could be adjusted upward as development occurs and is projected to increase by approximately 100 AF by the end of the planning period.

Table 19 indicates the transfer and exchange opportunities available the District.

Table 19. Transfer and Exchange Opportunities (AF/Y)

Source Transfer Agency	Transfer or Exchange	Short or Long-Term	Proposed Quantity
Fox Canyon GMA	Transfer	Long-Term	≤100
Total		**935**	≤100

The potential of developing new sources of supply through both short term and long-term potable water exchanges or potable water transfers is recognized. The District remains vigilant to exchange and transfer opportunities and would incorporate feasible strategies into its long range plan should such opportunities present themselves.

2. Groundwater Banking Programs

The only groundwater banking currently available to Camrosa is its own Woodcreek Well in the Pleasant Valley Basin. This well is an injection/extraction and thus has the capability of being operated as an aquifer storage and recovery (ASR) facility whenever surplus SWP water is available, usually during the winter months. Although surplus water is not available every year, Camrosa has injected up to 300 AF of imported water a year. The injected water is later pumped during periods of high demand or left stored for future years. In recent years, very little water has been injected into the basin and for the most part the Woodcreek Well is used only for extraction. In December 2010 and January 2011, the District injected 46 AF. As the cost of imported water continues to rise, operating the Woodcreek Well as an ASR facility has become uneconomical. It is not likely that any significant additional quantities of water will be injected until such an enterprise becomes economical again.

D. Desalinated Water Opportunities

The UWMP Act requires a discussion of potential opportunities for use of desalinated water (Water Code Section 10631[i]). Camrosa has explored such opportunities, and they are described in the following section, including opportunities for desalination of brackish water, groundwater and seawater. Camrosa Water District has several opportunities to develop more local groundwater for potable consumption through the construction of desalination facilities. Three areas have been identified as sources of local groundwater that, if desalinated, would increase locally produced potable supplies.

1. Brackish Water

Two of the groundwater basins that offer opportunities for desalination contain water of sufficiently elevated salinity to be considered “brackish.”

a. Perched Aquifer

As discussed above under Groundwater, the Perched Aquifer at the base of the Conejo Hills provides Camrosa Water District with an opportunity to desalinate local brackish groundwater for potable use. In the past, the Perched Aquifer provided Camarillo State Hospital with 100% of its potable water needs. The proposed Round Mountain Water Treatment Plant (RMWTP) will be designed as a 1.0 MGD capacity reverse osmosis (RO) treatment facility. A pipeline will interconnect the treated water with the existing District infrastructure that serves the CSUCI campus and a second pipeline will transport brine concentrate from the treatment plant through the regional Salinity Management Pipeline (SMP), built by Calleguas Municipal Water District, for ocean disposal. The new treatment plant is expected to remove approximately 85-90% of all constituents, while producing approximately 80% potable water and 20% brine. Construction is expected to commence in early 1012.

b. Northeast Pleasant Valley Basin – Regional Desalination Facility

Another possible measure to develop local sources is to construct an additional desalination facility in the general area surrounding Camrosa Water District. Several agencies in the area are currently pursuing an investigation into the feasibility of constructing the Northeast Pleasant Valley Basin Groundwater Desalter just outside the District boundary in the City of Camarillo. A distinct advantage of this project is that the proposed wellfield would draw from the Northeast Pleasant Valley Basin (PVB), instead of the Fox Canyon Aquifer. This area is considered a sub-basin and is hydrogeologically restricted from the Pleasant Valley Aquifer and is easily recharged by surface flows.

The sub-basin is recharged from the Arroyo Las Posas (aka Arroyo Simi upstream and Calleguas Creek downstream) at a surface water inflow rate estimated between 10,000 and 15,000 AF/Y. The water levels in this sub-basin have risen dramatically (over 250') in the past 20 years from this recharge. As surface water in the Arroyo Las Posas originates as tertiary-treated effluent from wastewater treatment plants upstream, the supply recharging the northeast PVB is expected to remain stable for the foreseeable future.

Water quality in the area is declining, with TDS levels currently in the 1,180 mg/l range. Should the northeast PVB continue to fill at its current rate, it will eventually spill into the Pleasant Valley Forebay, potentially degrading the high-quality water there. The Northeast Pleasant Valley Basin Desalter would therefore accomplish several regional goals, including (but not limited to) reducing dependence on imported water, meeting water quality requirements, transporting salts off of the watershed and protecting higher-quality water within the central Pleasant Valley Basin.

Salty groundwater would be pumped from two exiting City of Camarillo wells and one new well north of Las Posas Road and east of Somis Road. Salinity would be removed from the water by a RO treatment plant, producing approximately 4,500 gallons per minute (GPM) of drinking water, which equates to approximately 7,300 AF/Y. The project is estimated to cost around $50M to construct and $3.7M per year to operate. The cost of product water is expected to be in the vicinity of $950 per AF. The brine stream from the desalter would be discharged into the Calleguas SMP.

2. Groundwater

a. Santa Rosa Basin

As mentioned briefly in Section 4.B.2, Camrosa Water District pumps its wells in the Santa Rosa Basin far short of both the Basin's sustainable yield and Camrosa's own pumping capacity. Sufficient groundwater may be available in the Basin to significantly increase production from local sources for potable consumption; current estimates are that an additional 1MGD could be pumped from the Basin. The District plans to update the Santa Rosa Basin Groundwater Management Plan in the near future to better define available yield. The quality of the water in the Basin, however, requires that the groundwater be blended with higher quality imported water to meet EPA drinking water regulations, but due to the wellfield's location, introducing greater quantities of imported water to the produced groundwater is not feasible.

A possible alternative is to treat a portion of the groundwater to a quality equal to that of blended groundwater served in the potable system and thereby increase the total groundwater produced from the Santa Rosa Basin. The proposed desalination facility would divert up to 1 MGD from the total groundwater pumped prior to it being blended, treat that stream to the appropriate quality, and inject it into the potable water distribution system. It is expected that, as with the Round Mountain Water Treatment Plant, 80% of the water introduced to the desalter would enter the District's distribution system and 20% would be disposed of in the SMP. This is not a near-term project, but is expected to become realized by the end of the planning horizon.

3. Seawater Desalination

Because the Camrosa Water District is not in a coastal area, it is neither practical nor economically feasible for it to implement a seawater desalination program. However, Camrosa could provide financial assistance to other water suppliers in the construction of their seawater desalination facilities in exchange for other supplies, such as SWP water from Calleguas or for groundwater. Such opportunities will be monitored for feasibility.

E. Recycled/Non-Potable Irrigation Water Opportunities

As described above, Camrosa Water District has two separate non-potable distribution systems, one that serves solely Title-22 recycled water directly from the Camrosa Water Reclamation Facility (CWRF) and the other which distributes non-potable surface water and local groundwater sometimes blended with imported

SWP water to control chloride levels. The content of the surface water, diverted from Conejo Creek, is primarily discharge from Hill Canyon Wastewater Treatment Plant in Thousand Oaks. Currently, Camrosa uses only about one half of the non-potable irrigation water available.

1. Recycled Water from Camrosa Water Reclamation Facility (CWRF)

Camrosa Water District owns and operates a 1.5 MGD Water Reclamation Facility (CWRF). The tertiary-treated product is delivered directly to CSUCI and to surrounding growers as recycled irrigation supply before being sent for storage to Camrosa's storage ponds, which have a storage capacity of 300 AF.

The CWRF produced approximately 1,522 AF of tertiary-treated recycled water in calendar year 2010. About half that flow was distributed to several agricultural properties near the plant and to CSUCI. In addition, Camrosa provides surplus recycled water to properties outside the District boundaries. It is Camrosa's goal that all recycled water produced by the CWRF be put to beneficial use and that none be disposed of in any other way. In the rare event that treated CWRF product flows exceed the capacity of Camrosa's storage ponds and PVCWD will not accept the water, remaining or surplus flows are discharged into Calleguas Creek. When the Salinity Management Pipeline (SMP) is complete and accepts surplus CWRF product, discharges into the creek will cease altogether. The only discharge to the creek during the ten-year period since 2000 was approximately 90 AF during the severe storms of January and February, 2005.

In 2005, the CWRF produced 1,650 AF of tertiary-treated recycled water. Between 2005 and 2010, the volume of CWRF product decreased 7% from 1,650 AF to 1,522 AF, largely the result of a concerted effort made by CSUCI to upgrade the aging wastewater collection system on campus to minimize infiltration and otherwise reduce wastewater flows and also the success of the district-wide water conservation efforts. With these efforts complete, it is expected that moderate growth in wastewater flows will continue on campus over the next 20 years, until the campus reaches full build-out. Accordingly, forecasts for recycled water contained in this document project a recycled water availability of 2,044 AF/Y by 2035.

To accommodate the anticipated increase in wastewater flows, Camrosa is currently in the process upgrading the capacity of the CWRF to 2.25 MGD. Henceforth, the District intends to distribute all CWRF product, with no discharges to the SMP except in the wettest periods.

2. Non-Potable Surface Water (from HCWWTP)

In 2002, non-potable surface water from the Hill Canyon Wastewater Treatment Plant (HCWWTP) became available to the District for the first time. The plant's product water is discharged into the Conejo Creek, where it joins the North and South Forks of the Arroyo Conejo, which are composed primarily of runoff from irrigation and city streets in and around Thousand Oaks. The combined volume of the two Forks of the Arroyo Conejo and the HCWWTP discharge constitute the total flow in what becomes Conejo Creek by the time water is diverted at Camrosa's Diversion Structure. The Arroyo Conejo Forks make up, on average, 20% of Conejo Creek. Between the origin of Conejo Creek and the Diversion Structure, an estimated 1 CFS is lost absorption, evaporation and limited use, called Creek Loss. As required by the water rights decision, another 6 CFS must be returned to Conejo Creek at the Diversion for environmental benefit downstream. Thus, the volume available to the District is the contents of the creek minus the 6 CFS. Table 20 displays the volumes and constituents of Conejo Creek for the previous six years and the total amount available to Camrosa Water District after creek loss and beneficial use.

Discharge from HCWWTP is measured year-round by the City of Thousand Oaks and is, within 1 MGD (10%), stable throughout the year. Using Parshall flumes, the City also measures the flows in the North and South Forks of Arroyo Conejo and provides Camrosa Water District with these flows in annual Flume Reports. This information was used in the calculations reflected in Table 20, below. The agreement regarding Camrosa's primary access to HCWWTP recycled water in Conejo Creek was executed in 1994.

This 25-year contract will expire in 2019. Camrosa is currently in the process of renegotiating the agreement to retain rights to Conejo Creek water.

Table 20. Conejo Creek/HCWWTP Product Available to Camrosa (AF/Y)

	2005	2006	2007	2008	2009	2010
Discharge from HCWWTP[1]	12,267	11,680	11,550	11,518	11,232	10,363
North Fork[1]	1,822	1,477	986	1,080	765	902
South Fork[1]	5,134	5,448	2,895	2,889	3,129	2,641
Total Conejo Creek[1]	19,223	18,605	15,431	15,486	15,126	13,907
Beneficial Use Return (6 CFS)	4,343	4,343	4,343	4,343	4,343	4,343
Creek Loss (1 CFS)[2]	1,086	1,086	1,086	1,086	1,086	1,086
Available to Camrosa	13,795	13,176	10,002	10,058	9,697	8,478
Diverted from Conejo Creek[3]	**7,862**	**9,152**	**9,053**	**8,224**	**8,895**	**8,853**
Difference/Amount Left in Creek[4]	5,933	4,024	949	1,834	802	-375
Percent of Creek Diverted	56.99%	69.46%	90.51%	81.77%	91.73%	104.43%

1) Data extrapolated from annual HCWWTP Flume Reports
2) Creek Loss estimate determined by Camrosa engineers in mass balance analysis of Conejo Creek
3) Data actual numbers from Camrosa Water District production reports
4) After 7.5 CFS of Beneficial Use and Creek Loss

Creek Loss is a combination of volume reduction due to seepage into the creek bed, water loss along the creek sides, evaporation, water rights and use below HCWWTP but above the Diversion Structure. As can be seen by the difference between the volume Available to Camrosa and Diverted in 2010, the 1.5 CFS Creek Loss estimate is not exact, for it is not possible that Camrosa diverted more water than was available, and as the Creek Loss is only theoretical, it is in that estimate that the error occurred. Depending on the saturation of the underlying creek bed, ambient temperatures and humidity throughout the year, less than 1.5 CFS may be lost. In 2010, the District diverted 8,853 AF of non-potable surface water from Conejo Creek for delivery through the Non-potable Surface Water Distribution System. These quantities are expected to even out at 10,667 AF/Y, mirroring a leveling off of growth in Thousand Oaks and attendant production of tertiary-treated recycled water at HCWWTP. From 2015 through 2035, it is expected that 10,667 AF of non-potable irrigation water will be available to the District from HCWWTP (see Table 23 for projected available volumes).

The District will continue to depend on Conejo Creek to supply non-potable irrigation water demand throughout the District, and much of the new demand that will be created with the expansion of the non-potable distribution system (see Section 4.F) will be met with Conejo Creek flows. Although the table above indicates that Camrosa diverted nearly every available acre-foot of the creek in 2010, this does not mean that the District is at risk of exhausting an integral supply source. The multiagency agreement that allowed for the creation of the Diversion Structure states that Camrosa has first rights to as much water as it can use prior to passing any surplus through to Pleasant Valley County Water District (PVCWD). As can be seen from Table 21, over the previous six years, more and more diverted Conejo Creek water has stayed within District boundaries. As of 2010, nearly 4,900 AF/Y of the Conejo Creek remain available to Camrosa, and it is in part from this remaining portion of Conejo Creek that Camrosa will supply non-potable demand as it continues to grow.

Table 21. Use of Conejo Creek Diversions: District vs. PVCWD (AF/Y)[1]

	2005	2006	2007	2008	2009	2010
Total Diverted	7,862	9,152	9,053	8,224	8,895	8,853
Passed Through to PVCWD	5,656	6,440	6,040	4,612	3,998	4,880
Used in Camrosa Water District	2,206	2,712	3,013	3,612	4,897	3,973

1) All information from Camrosa Water District production reports

3. Recycled Water from Camarillo Sanitation District

The Camarillo Sanitary District (CamSan) was formed in 1955 to provide wastewater treatment for most of what is now the City of Camarillo. The treatment plant occupies a 20-acre site on Howard Road next to Conejo Creek within the Camrosa Water District boundaries. The plant currently treats about 4.0 million gallons of wastewater each day, with a maximum capacity of 6.75 million gallons. Over the years, the treatment plant has undergone several modifications to increase its capacity and to incorporate new technologies. Construction to upgrade treatment from "secondary" to "tertiary" levels, in order to meet all DHS was recently completed. After primary treatment the wastewater undergoes tertiary treatment using an "activated sludge treatment" process and is then sent into secondary clarifiers and tertiary filters ultimately disinfected in a contact basin using chlorine. Dechlorination is accomplished with sulfur dioxide before the effluent is delivered for agricultural purposes or discharged to Conejo Creek.

On December 15, 2005, the District executed an agreement with CamSan to pursue a phased approach to jointly resolving salts accumulation, increasing local water supply and enhancing its quality. One of the projects entailed the future delivery of up to 7,500 AF/Y of tertiary-treated recycled water from CamSan via Camrosa's Non-Potable Irrigation Water Distribution System. At the time, the City of Camarillo did not anticipate operating its own separate recycled water distribution system. The initial agreement included the construction of additional facilities by CamSan to treat CamSan's WWTP effluent and deliver it to Camrosa. To date, CamSan has completed upgrading the treatment process at its WWTP with nitrification/denitrification and tertiary filtration equipment necessary to meet Title-22 requirements and has completed the design for 80% of the pipeline to deliver effluent to Camrosa's distribution system. Camrosa has completed the construction necessary for interconnection to Calleguas's SMP and completed design for a new discharge point south of Potrero Road, which CamSan partially funded.

In August, 2010, CamSan staff notified Camrosa staff that the original agreement to provide up to 7,500 AF/Y of recycled water required modification due to the City of Camarillo's intent to construct its own non-potable recycled water distribution system and make non-potable recycled water available to its water customers to meet recent water conservation mandates imposed by Metropolitan Water District and the State of California. CamSan has provided updated estimates of recycled volumes that will be made available to the District. These numbers are reflected in Table 22 below. Camrosa will continue to pursue opportunities for mutually beneficial interagency cooperation and anticipates that deliveries of up to 3,400 AF/Y of non-potable recycled water will eventually be available from CamSan as the City of Camarillo nears build-out. Initial deliveries of 440 AF/Y are expected to begin in 2015. Information received from CamSan indicates specific projections through 2030, and then a more general projection of what will eventually be available when the City of Camarillo reaches full build-out. This CamSan has labeled simply "Future." In order to arrive at a more precise estimate of the amount of water available from CamSan in 2035, Camrosa averaged the rate of growth over the period 2010-2030 of Total Recycled Water Produced by CamSan (107%) and applied this to the projected Total Recycled Water Produced by CamSan 2030, arriving at 5,925 AF. Being as CamSan projects always delivering 4,100 AF to the City of Camarillo, even at build-out,

Camrosa subtracted that same volume from the Total Recycled Water Produced to arrive at an estimate of 1,825 AF of CamSan water available for delivery to Camrosa in 2035, as displayed in Table 22 below.

Table 22. Discharges from Camarillo Sanitation Department (AF/Y)

	2010	2015	2020	2025	2030	Future[1]	2035[2]
Total Recycled Water Produced by CamSan	4,200	4,340	4,780	5,170	5,530	7,500	5,925
Recycled Water Deliveries to City of Camarillo	1,110	3,900	4,100	4,100	4,100	4,100	4,100
Recycled Water Available to Camrosa	0	440	680	1,070	1,430	3,400	1,825

1) CamSan's estimate of recycled water availability and use at City of Camarillo full build-out
2) Camrosa's estimate based on average growth over 2010-2030

4. Total Non-Potable Recycled Water Available to Camrosa Water District

Table 23 indicates the total recycled water projected to be available to Camrosa Water District between now and 2035.

Table 23. Total Combined Recycled Water Available to Camrosa (AF/Y)

	2010	2015	2020	2025	2030	2035
Camrosa WRF	1,522	1,696	1,870	2,044	2,044	2,044
HCWWTP	8,853	10,667	10,667	10,667	10,667	10,667
CamSan	0	440	680	1,070	1,430	1,825
Total	**10,375**	**12,803**	**13,217**	**13,781**	**14,141**	**14,536**

5. Non-Potable Irrigation Water Use

As described in Section 3, the use of non-potable irrigation water has been steadily increasing in the District since the completion of the Conejo Creek Diversion Structure in 2002. Prior to that, the District's non-potable irrigation water distribution system supply was limited to the Water Reclamation Facility (WRF) product. When the Diversion came online, deliveries were made initially to agricultural users. As time went on, the use of non-potable irrigation water diverted from Conejo Creek for landscape irrigation increased as areas built with dual-plumbing connected to the system and others began to install new infrastructure to accommodate the transfer. In 2007, Leisure Village, a retirement community located in the District, began converting its common area, open space, landscape and golf course irrigation to the non-potable distribution system. Completed in 2008, this accounts for roughly 500 AF/Y of the increase over the previous five years. Table 24 indicates the previous five years (2006-2010) of non-potable irrigation water use within the District, as well as the 2005 UWMP projection for 2010 use, as a point of reference. Line loss was not accounted for prior to 2010.

Table 24. Non-Potable Irrigation Water: Past Use (AF/Y)						
User Type	**2006**	**2007**	**2008**	**2009**	**2010**	**Projected 2010[1]**
Municipal & Industrial	167	839	1,166	1,436	1,253	N/A
Agriculture	6,169	5,050	5,301	5,820	5,512	N/A
Total	**6,336**	**5,889**	**6,467**	**7,256**	**6,764**	**6,800**

1) Projected in Camrosa's 2005 UWMP

Moving forward, line loss of 5% is assumed and accounted for in non-potable irrigation water use projections. The substantial growth in non-potable demand between 2015 and 2030 is due to the estimated potable landscape/agriculture irrigation offset of the proposed non-potable expansion described in Section 4.F, below, which reflects the current strategy of the District in improving self-reliance and lessening dependence on imported SWP water.

Table 25. Non-Potable Irrigation Water: Current & Potential Future Use (AF/Y)					
User Type	**2015**	**2020**	**2025**	**2030**	**2035**
Municipal & Industrial	1,708	4,291	5,102	5,829	5,829
Agriculture	5,570	4,090	4,090	4,090	4,090
Other (NP Line Loss of 5%)	364	419	460	496	496
Total	**7,642**	**8,800**	**9,652**	**10,415**	**10,415**

6. Rate Incentives

In order to encourage use of non-potable irrigation water within the District, significant price incentives have been established. The current (2010) price per acre-foot of potable water for irrigation is $1,102; non-potable irrigation water served from the Non-potable Irrigation Water Distribution System costs $305 per AF and non-potable water in the Blended-Ag area, which contains on average roughly 60% potable water to control chloride levels, costs $862 per AF. The vast majority of customers who will be offered non-potable irrigation water through the expansion described above would receive unblended non-potable irrigation water at a substantially reduced rate to provide sufficient incentive to use this alternate source of supply.

The Board of Directors has adopted a policy that requires developers to install dual piping systems for all new developments. While the potential increase in non-potable demand resulting from such a policy is difficult to quantify due to the unpredictability of the housing market, such a policy should ensure an increase in demand for non-potable irrigation water to serve M&I irrigation needs.

F. Future Water Projects Under Consideration

Camrosa Water District has developed two strategies to reduce dependency on imported State Water Project water: increasing the production of potable water from local groundwater sources and expanding the non-potable irrigation water distribution system. These two strategies are not contingent upon one

another, nor are they mutually exclusive. The projects presented below represent portions of these two strategies, which Camrosa has included in this plan to demonstrate ways in which the dependency on imported SWP water may be reduced, and are considered a non-exclusive list of alternatives currently under consideration by District staff and its Board. Various projects to pursue each strategy have begun and some have even been completed, others are being planned and still others remain only conceptual. What follows below is a general outline of the two strategies; individual projects will be presented to Camrosa's Board of Directors for approval after in-depth economic analysis and feasibility studies.

1. Potable Water Production Projects Under Consideration

The main components of the District's plan to develop local groundwater sources have been discussed in Section 4.D – Desalinated Water Opportunities. In addition to these three desalination projects, the District also plans to construct an additional well in the Tierra Rejada Valley. As the Round Mountain Water Treatment Plant and the second well in the Tierra Rejada Valley are both expected to come online before the next update of this Urban Water Management Plan in 2015, the volumes they are expected to produce have already been taken into account in supply and demand projections throughout this document. The other two desalination facilities are still conceptual and therefore are not considered in potable water supply projections.

a. Round Mountain Water Treatment Plant

One of the old wells that tap the Perched Aquifer at the base of the Conejo Hills, the University Well, has been rehabilitated for the express purpose of feeding a 1 MGD desalination facility. Preliminary yield and drawdown tests indicate that the well will easily produce the desired 1 MGD and initial water quality assessments indicate that the brackish groundwater within the Perched Aquifer should respond well to basic RO filtration. A contract to design the Round Mountain Water Treatment Plant (RMWTP) has been awarded. Easements necessary for pipelines to connect the University Well to the RMWTP are being acquired. A brine line to the regional SMP has been completed. It is estimated that the RMWTP will be operational and providing up to 1 million gallons per day (1,120 AF/Y) of potable water to the potable distribution system by early 2013.

b. Regional Desalination Facility

On February 23, 2011, Camrosa's Board of Directors approved an agreement with the Calleguas and the cities of Camarillo, Thousand Oaks and Simi Valley to jointly fund a preliminary study to determine the possibility of a regional desalination facility, the Northeast Pleasant Valley Basin Groundwater Desalter, as described in Section 4.D.2. The objectives of this initial study include: determining water quality/level monitoring, Basin Management Objectives, contingency plans, potential sustainable extractions, and the necessary number, depth and location of wells; defining cones of depression; analyzing the project's potential impacts; and preparing necessary CEQA documentation.

c. Desalination of Conejo Wellfield Water

Desalinating Conejo Wellfield water to increase local potable production is contingent upon the SMP, for without that interagency project, disposing of the brine stream from a desalination facility located in this area of the District would be prohibitively expensive. Further investigation and cost-benefit analyses are necessary prior to determining the feasibility of such a project; a schedule for the process is therefore not available.

d. Second Well in Tierra Rejada Valley

The water in the Tierra Rejada Basin is currently of sufficiently high quality to not require blending prior to being injected into the potable water distribution system. The District's single well there produces less than its design capacity due to the tendency for a cone of depression to develop when the well is pumped. Developing a second well in the Tierra Rejada Groundwater Basin would allow the District to increase the volume of high-quality water produced in the District's easternmost service area. In addition, the new well would allow the introduction of groundwater into in the highest elevations in the District, an area now served

exclusively with imported water received through a Calleguas meter station. Service reliability would be improved in that pressure zone as a redundant source of potable water would be available in the event of an interruption of imported water service.

This project is predicated upon the prior completion of a Ground Water Management Plan for the Tierra Rejada Basin, as no GWMP for the basin currently exists.

2. Non-Potable Irrigation Water Distribution System Expansion Projects Under Consideration

Another potential strategy of the District's to decrease dependence on imported water is to expand the non-potable irrigation water distribution system so that as many customers in the District service area as possible can irrigate with non-potable irrigation water. Between the District's three sources of non-potable irrigation water described in Section 2.C, there is far more than enough non-potable irrigation water to meet irrigation demand within the District for the foreseeable future. Therefore, the majority of the projects described herein are concerned with expanding the distribution system infrastructure, rather than developing additional sources of non-potable irrigation water. Only one project, rehabilitating the Penny Well, will develop a brand new non-potable water source. The interconnection to the CamSan non-potable water distribution system has been described several places in this document and will not be elaborated upon here. Descriptions of the infrastructure improvements and expansion will be brief and aimed at providing sufficient explanation of the schedule for the transfer of demand from the potable to the non-potable systems first presented in Tables 6 and 7, detailed here in Table 26 and assumed throughout the remainder of this plan.

The specific potential non-potable demand displayed in Table 26 below was calculated based on estimated outdoor irrigation of the parcels that would be provided non-potable service under the expansion strategy outlined herein, which is only one of several options under consideration. In order to estimate this demand, the actual 2008 potable demand of each parcel to potentially be transferred was obtained through Camrosa's CIS/GIS interface. 2008 demand was then multiplied by 80 percent, which is the estimated average of usage per parcel that goes to outdoor irrigation. Parcels were then grouped into phases according to their general geographical area. Although plans for expansion are still general in nature and the descriptions attendant to Table 26 are non-exclusive, specific volumes of potential non-potable irrigation demand are listed here in order to substantiate the information presented in Tables 6 and 7 above.

Of the significant volume of water available from the Hill Canyon Wastewater Treatment Plant, diverted at the Conejo Creek Diversion Structure, the District retained roughly half for use within the District's service area in 2010. The remainder was sent to PVCWD as per the multiagency agreement described in Section 2.C.3. Considering current use and projected development, the potential exists to offset 2,658 AF/Y of potable water use within the District, which is a significant portion of what will be available to the District over the same time frame.

As currently conceived, the expansion would take place in several distinct segments, each of which contains several phases. The location of new storage reservoirs and the alignment of their attendant pipelines will determine which and how many parcels could be provided non-potable irrigation water and the timeframe the water would become available; Table 26 and the discussion that follows are based on one, non-exclusive set of options for this expansion.

Table 26. Non-Potable Distribution System Expansion (Current/Non-Exclusive Conception of Phases)

Project Segments	Parcels	Scheduled Completion	New Non-Potable Demand	Average AF/parcel
a. Rehabilitate Penny Well	37	2012	75	2.03
b. Santa Rosa Valley	723	2015-2030	1,696	2.35
c. Seminary & Surrounding Area	651	2020	568	0.87
d. Non-Potable Pressure Zone 1	572	2030	319	0.56
TOTAL NEW NP DEMAND	**1,926**	**2030**	**2,658**	**1.38**

a. Rehabilitate Penny Well

The Penny Well was initially used as a potable water supply and the well is still listed as a standby well in the potable distribution system. In an abundance of caution, the well was taken offline in the spring of 1999, when trace concentrations (well below CDPH MCLs) of agricultural pesticides were found in the wellwater. Subsequently, the winter storms of 2005 washed out the pipeline and power lines leading to the well and it has not been used since.

As the contaminants found in the wellwater are not a concern for non-potable water, it is the District plans to return the Penny Well to use as part of the non-potable distribution system. The Penny Well's immediate impact will be to provide additional pressure to feed Wildwood Estates, located just south of Santa Rosa Road. This residential housing tract is dual-plumbed, but is currently not using its non-potable system due to insufficient pressure. Initially, the well will be pumped far short of its 400 GPM capacity and will contribute just enough to meet the limited Wildwood demand. Based on historical pumping and the general condition of the Santa Rosa Basin (in which the Penny Well lies), the District expects an additional 350 AF/Y from the Penny Well. This is the volume that has been added to supply projections throughout this Plan. Rehabilitation and interconnection is expected to be complete by the end of 2012.

Should the contaminant plume that took the Penny Well out of commission in 1999 have moved on and should water quality be sufficiently high, water produced from the Penny Well may be piped into the potable distribution system. Whether it is used in the potable or non-potable system, the Penny Well's output should reduce the volume of SWP water that must be imported.

b. Santa Rosa Valley

Should eastward expansion occur in Santa Rosa Valley, the non-potable irrigation water distribution system would need a significant increase in both storage and pumping capacity in the valley. Currently, two new storage reservoirs – NP 4C Tank and NP 3D Tank – are proposed to provide the needed storage and pressure for the expansion. Parcels near these tanks and their pipelines would begin receiving non-potable irrigation water upon completion of construction.

The main backbone of the Santa Rosa Valley non-potable irrigation water distribution system would extend southeastward in stages, as presented in Table 26, displacing an estimated 1,696 AF/Y of imported potable water use with non-potable irrigation water. Two large residential areas, which would comprise the final two phases of the expansion, may require the introduction of another source of non-potable water and, because of their elevation, more storage and/or new pump stations. Nevertheless, the 456 AF/Y of potential potable

water offset is a goal of the District's and is included in the 2030 supply/demand projections throughout this Plan.

c. St. John's Seminary and Surrounding Service Area

Several housing tracts in the western area of the District, near St. John's Seminary, are either dual-plumbed or will be conditioned to be dual-plumbed upon development. At the present time, this entire area is being irrigated with potable water, both agricultural parcels and housing tracts. Due to the area's elevation, a new pump station and reservoir would have to be built to provide sufficient volume and pressure to the 651 parcels that are estimated to demand 568 AF/Y of non-potable irrigation water.

The area has an existing well located within the Fox Canyon Groundwater Management Agency jurisdiction. As part of the proposed development agreement between Shea Homes and the District, Camrosa will seek to have the well and the 104.9 AF/Y allocation dedicated to the District.

d. Non-Potable Pressure Zone 1

Several areas in the lower elevations of the District's service area are potential candidates for conversion to the non-potable irrigation water distribution system. As can be seen in Table 26, these projects have low estimated acre-foot per parcel demands. No other operational constraints would necessarily be alleviated by providing non-potable water to these areas. Nonetheless, the offset of potable water is significant: transferred non-potable demand represents 2% of the total water used in the District, and roughly 5% of the annual imported potable water.

G. Summary of Current and Projected Water Supplies

The total water supply available to Camrosa Water District was approximately 19,561 AF in 2010. These sources reflect the continued diversion of non-potable surface water from Calleguas Creek, production of recycled water from Camrosa's water reclamation facility, sustained groundwater pumping, and imported State Water Project deliveries through Calleguas Municipal Water District. By 2015, through renewed negotiation, interconnection with the Camarillo Sanitation District is anticipated to bring an additional supply of 440 AF of recycled water to the District. Small pockets of additional urban growth will increase GMA credits by another 100 AF during the planning period. Potential new supplies could be developed by treating water pumped from Santa Rosa Groundwater Basin and desalinating brackish groundwater in the Perched Zone. Water supplies are projected to grow to 32,190 AF by the year 2035.

Section 5 Water Supply Reliability & Water Shortage Contingency Planning

A. Water Supply Reliability

LAW

10620(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10631(c)(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

10634 The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision 9A0 of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

10631(c) (2) Describe the reliability of the water supply and vulnerability to seasonal or climactic shortage, to the extent practicable, and provide data for each of the following: (A) An average water year, (B) A single dry year, (C) Multiple dry water years.

10635(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water servicer to its customers during normal, dry and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state regional, or local agency population projections within the service are of the urban water supplier.

The potential issues that could result in reduction of the amount of water supply from each of the Water Supply Sources (listed in Table 14) are discussed below. All water sources are available at consistent levels of use; changes to those levels of use would be brought around by significant and gradual changes in environmental factors, water quality and/or the climate. Where legal agreements are applicable, it is the District's policy to renew or renegotiate current agreements or search out alternative sources far enough in advance to offer ample opportunity to ensure supply prior to the current agreement's expiry. Large-scale conservation and other Demand Management Measures are discussed elsewhere in this Section.

1. Imported Water from Calleguas

As Camrosa depends exclusively upon Calleguas Municipal Water District for its imported potable water supply, and because that supply constitutes roughly two-thirds of the District's total potable supply, the reliability of Camrosa's potable distribution system is dependent upon and equal to the reliability of Calleguas. The main and primary threat to Camrosa's supply of potable State Water Project water imported from Metropolitan Water District via Calleguas Municipal Water District is the relative health and ability to convey water from the Sacramento-San Joaquin Delta. As discussed throughout this plan, the District's primary strategy to conserve imported water and employ alternate sources to SWP water is the large-scale conversion of outdoor, landscape and agriculture irrigation to non-potable irrigation water use. Aside from increasing the use of desalination of various water sources (projects which are presented in

Sections 4.D and 4.F), the District does not have a viable alternative to importing some high-quality, potable SWP water from Metropolitan via Calleguas.

2. Groundwater

Groundwater available to the Camrosa Water District in the four aquifers the District overlays is used to augment imported SWP water, thereby increasing self-reliance and reducing demand on the Sacramento-San Joaquin Delta. As discussed in detail in the remainder of this Section, conservation efforts have proven a great benefit to reducing the amount of imported SWP water the District demands. As the District becomes increasingly capable of utilizing more and more groundwater, the need to import SWP water will continue to decline.

a. Tierra Rejada Basin

Unexpected reductions in the water table height and water level quality are the primary threats to the Tierra Rejada Basin's reliability. Should water table levels fall, the Tierra Rejada Well's contribution to Camrosa's supply would have to be made up for with increased imported SWP water. Should water quality degrade, water from the Tierra Rejada Basin could potentially be blended with SWP water or, if quality is poor, directed into the non-potable irrigation water distribution system. In either case, more SWP water would have to be imported for the potable system.

The Tierra Rejada Basin does not currently have a groundwater management plan, but the District plans to complete that in the near future.

b. Santa Rosa Basin

Even by the most conservative estimates, Santa Rosa Basin has additional yield not currently utilized and the basin remains full even during the driest of years. Unexpected reductions in the water table height in the Santa Rosa Basin could negatively affect the District's dependence on the Basin. The project to increase production from the Conejo Wellfield by desalinating a portion of the water extracted there is designed to reduce the District's dependence on imported water under normal conditions and provide additional supply during periods of high demand. Should water levels in the Santa Rosa Basin fall or the water quality significantly degrade, potable supply extracted from the Basin would have to be replaced with imported SWP water; non-potable supply would be substituted with non-potable irrigation water. None of these eventualities is likely to occur, however, and the reliability of the Basin is relatively sure.

The District has plans to update the Santa Rosa Basin Groundwater Management Plan (SRGMP) in the near future.

c. Pleasant Valley Basin

The Fox Canyon GMA's allocation for the Woodcreek Well is based on an allowance for the residential development overlying the Fox Canyon Aquifer at a rate of 1 acre-foot per acre of land developed. As of 2010, Camrosa's allocations are approximately 807 AF/Y. Due to additional development within the District, this allocation is expected to increase to approximately 916 AF/Y by the end of 2014 and then remain relatively stable through 2035. Because this is an annual allocation, water not pumped cannot be carried over from one year to the next. However, because it is based on developed land, the allocation is considered extremely reliable. As the Woodcreek Well, which produces water from the Fox Canyon Basin, currently produces water that is injected directly into the potable distribution system, should its water quality deteriorate mildly, the water could still be used in the potable system, provided it were blended with SWP. If it were to degrade further, it could be used in the non-potable distribution system, and its contribution to potable supply would have to be fulfilled with SWP water.

d. Perched Aquifer

Due to the fact that the Perched Aquifer has not been used as a source to supply significant volumes of water for over thirty years, it is difficult to know how the aquifer will respond to renewed extraction at the

proposed volumes. However, based on the most recent hydrogeologic investigation, extractions are planned at a level that can be sustained indefinitely.

3. Recycled Water & Non-Potable Irrigation Water

The Title-22 recycled water directly from Camrosa's WRF and CamSan's WWTP, and the non-potable surface water from HCWWTP that is diverted from Conejo Creek, all come from consistent wastewater flows. They are therefore extremely reliable sources of non-potable irrigation water supply, even in the driest of years.

During the planning period 2010-2035, it is expected that the Conejo Creek Diversion will consistently produce more water than needed to satisfy demands within the District and the surplus water will continue to be delivered to the Pleasant Valley County Water District under the existing agreement.

Table 27 indicates the disposal breakdown of the three sources of recycled water available to the District for use in the non-potable irrigation water distribution system.

Table 27. Disposal of Treated Wastewater (AF/Y)

Method of Disposal		2010	2015	2020	2025	2030	2035
CWRF	Discharged to Creek	0	0	0	0	0	0
	Recycled	1,522	1,696	1,870	2,044	2,044	2,044
CamSan	Discharged to Creek	0	0	0	0	0	0
	Recycled	4,200	4,340	4,780	5,170	5,530	5,996
	Ag Delivery	840	840	840	840	840	840
HCWWTP	Discharged to Creek	3,167	4,053	4,053	4,053	4,053	4,053
	Recycled	9,939	10,667	10,667	10,667	10,667	10,667
Estimates based upon plant capacity							

The only foreseeable interruptions in supply service of the three sources of non-potable irrigation water are pipeline ruptures on the short-term side and contract/agreement expirations on the long-term. In order to avoid the latter, it is Camrosa's policy to renegotiate contracts well in advance of their expiry. This policy is intended to allow the District sufficient time to develop alternative supplies to ensure that the non-potable irrigation water distribution systems receive adequate supply.

B. Water Shortage Contingency Planning

LAW

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

1. Imported Water

In 2010, approximately 40% of the water used within Camrosa Water District was State Water Project water imported from Metropolitan Water District through Calleguas Municipal Water District. Approximately two-thirds of the District's potable water is imported SWP water and the non-potable irrigation water system contains about 10% imported water to curb chloride content in certain portions of the supply served to agricultural users. As Camrosa relies exclusively on Calleguas Municipal Water District for its SWP water supply, and that supply constitutes the majority of the potable water system, the reliability of Camrosa's potable water system is dependent upon Calleguas. Accordingly, the table below presents Calleguas's own local supply projections.

Over the next 10 years, shortages in local supplies will have little impact upon the District's water supply. The quantities of imported State Water Project water that Camrosa relies on to meet normal year demands are significantly reduced from historical levels. This reduction from historical import levels will continue as the non-potable distribution system expands, as demonstrated by the conversion of Leisure Village to non-potable irrigation. Furthermore, Metropolitan has maintained that they will be 100% reliable for the next 20 years, and Camrosa will rely upon augmentation of its imported supply up to historical levels to meet dry- and multiple dry-year demands.

Camrosa will continue to import SWP water to blend with well water to meet potable demand. However, the quantities may be subject to increases in the future should water quality in the Santa Rosa Basin or the Fox Canyon Aquifer deteriorate. Similarly, should chloride levels in SWP water rise precipitously, greater quantities may be necessary to achieve an acceptable blend for potable water quality purposes.

Since 1991, Metropolitan has made significant investments in conservation, water recycling, storage and improved supplies. Groundwater storage programs with Semitropic Water Storage District and Arvin-Edison Water Storage District increase Metropolitan's out-of-region storage capacity of state water project water by 600,000 AF. Additional groundwater storage programs have been established with the San Bernardino Valley MWD, and Kern-Delta Water District that will expand that capacity further. The completion of Diamond Valley Reservoir has added 800,000 AF of supply to southern California's mix of resources available to meet dry year needs. The adoption of a "Water Surplus and Drought Management" (WSDM) Plan in 1999 by the Metropolitan Board of Directors has resulted in more effective management of water resources to further improve the reliability of water deliveries by Metropolitan Water District.

In addition, Metropolitan's 2010 Urban Water Management Plan outlines several other projects being pursed by Metropolitan and the State of California to protect and increase imported SWP supplies. These include flexible Central Valley storage and transfer programs, the Delta Action Plan, the Two-Gate System in the Delta, the Bay Delta Conservation Plan and the Water Supply Allocation Plan.

Table 28 outlines the projected reserves for Metropolitan Water District for Average, Dry Year and Multiple Dry Year conditions. As can be seen from this table, the conservation efforts undertaken by Metropolitan Water District and its member agencies over the previous several years have reduced demand totals well below available supply totals under Normal Year rainfall conditions.

Table 28. Projected Reserves for Metropolitan Water District (1,000 AF)

Normal Year	**2015**	**2020**	**2025**	**2030**	**2035**
Supply Totals	2,395	2,522	2,553	2,580	2,603
Demand totals	1,928	1,763	1,808	1,874	1,931
Reserves (Supply – Demand)	**467**	**759**	**745**	**706**	**672**
Reserves as a % of Demand	**24.22%**	**43.05%**	**41.21%**	**37.67%**	**34.80%**
Single Dry Year	**2015**	**2020**	**2025**	**2030**	**2035**
Supply Totals	2,260	2,322	2,366	2,405	2,419
Demand totals	2,094	1,993	2,025	2,080	2,146
Reserves (Supply – Demand)	**166**	**329**	**341**	**325**	**273**
Reserves as % of Demand	**7.93%**	**16.51%**	**16.84%**	**15.63%**	**12.72%**
Multiple Dry Years	**2015**	**2020**	**2025**	**2030**	**2035**
Supply Totals	2,171	2,305	2,343	2,378	2,402
Demand totals	2,154	2,049	2,106	2,163	2,224
Reserves (Supply – Demand)	**17**	**256**	**237**	**215**	**178**
Reserves as % of Demand	**0.79%**	**12.49%**	**11.25%**	**9.94%**	**8.00%**

1) Information from Calleguas Municipal Water District's 2010 Urban Water Management Plan

Since 1991, Calleguas Municipal Water District, has also implemented a strategy for meeting rising water demands in its service area by implementing both regional and local supply augmentation and demand management programs. The Las Posas Aquifer Storage and Recovery Project has been an ongoing

project that will store up to 300,000 AF of imported water for use during drought. The project is approximately 70% complete and has an extraction capacity of approximately 70 cubic feet per second (CFS). It is anticipated that a maximum extraction rate of 100 CFS will be available upon completion of the project. Expansion of Lake Bard Water Treatment Plant to 100 CFS has been completed. Finally, Calleguas has invested in regional recycling projects to reduce demand on imported water.

Table 29 below outlines the projected reserves for Calleguas Municipal Water District for Average, Dry Year and Multiple Dry Year conditions:

Table 29. Projected Reserves for Calleguas Municipal Water District (1,000 AF)[1]

Normal Year	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Supply Totals	118.5	129	137	140.8	142.4	143.8
Demand totals	116.9	113.4	118.3	121.4	124.8	128.1
Reserves (Supply – Demand)	**1.6**	**15.6**	**18.7**	**19.4**	**17.6**	**15.7**
Reserves as a % of Demand	**1.37%**	**13.76%**	**15.81%**	**15.98%**	**14.10%**	**12.26%**
Single Dry Year	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Supply Totals	121.3	131.9	140	143.8	145.5	147
Demand totals	120.8	118.6	123.2	126.7	132	135.2
Reserves (Supply – Demand)	**0.5**	**13.3**	**16.8**	**17.1**	**13.5**	**11.8**
Reserves as % of Demand	**0.41%**	**11.21%**	**13.64%**	**13.50%**	**10.23%**	**8.73%**
Multiple Dry Years	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Supply Totals	N/A	131.1	140	145.3	148.5	149.5
Demand totals	N/A	125.4	129.9	132.7	138.7	142.6
Reserves (Supply – Demand)	**N/A**	**5.7**	**10.1**	**12.6**	**9.8**	**6.9**
Reserves as % of Demand	**N/A**	**4.55%**	**7.78%**	**9.50%**	**7.07%**	**4.84%**

1) Information from Calleguas Municipal Water District's 2010 Urban Water Management Plan

Calleguas expects to be able to meet all demands for imported water throughout the 25-year planning period, for all three rainfall category years. As a result, the wholesale supply available to the District is considered to be 100% reliable for normal, single dry and multiple dry years. There are no known inconsistencies in the supply that would reduce the amount of water available under non-emergency conditions.

Table 30. Wholesale Supply Reliability (% of Normal Supply)

	Average/Normal Year	**Single Dry Year**	**Multiple Dry Years**		
			Year 1	Year 2	Year 3
Calleguas MWD	7,900	100%	100%	100%	100%

In 1991, the District was importing more than 12,000 AF of State Water Project per year. In developing the inventory of water supplies (Table 14) in 2005, the District expected to import an average of 8,700 AF/Y

between 2010 and 2030. Due to statewide reassessment of the Sacramento-San Joaquin Delta's overall health and sustainability Metropolitan has reduced the amount of water it will allow its constituent agencies to purchase. Thus, quantities expected to be imported for 2015 through 2035 are not expected to exceed 7,900 AF/Y, even in the driest years. Due to the conscious effort on the part of the District to develop alternate water supplies in order to reduce dependence upon imported supplies, and the continued success of conservation efforts on the part of customers, the District will likely stay well below this amount.

2. Water Supply Shortage Stages & Conditions

On June 24, 2009, the Camrosa Water District adopted Ordinance 40-10, "Rules and Regulations Governing the Provision of Water and Sanitary Services." Among other things, the ordinance establishes conditions of service for all classes of water and establishes prohibitions against water waste and provisions for staged reductions in water service during water shortage emergencies. The Ordinance is included as Appendix C in its entirety; applicable portions are quoted below:

5.14. Prohibition of Water Waste

No person shall cause or permit water under his/her control to be wasted. Willful waste of water may result in additional fees, charges and/or termination of service as directed by the Board of Directors. The following prohibitions are in effect at all times, regardless of whether any declared water supply shortage or water emergency condition is in effect:

1. Gutter Flooding - No person shall cause or permit any water furnished to any property within the District to run or to escape from any hose, pipe, valve, faucet, sprinkler or irrigation device into any gutter or to otherwise escape from the property, if such running or escaping can reasonably be prevented.

2. Leaks - No person shall permit leaks of water that he/she has the authority to eliminate. Any detected leak, break or malfunction shall be corrected within 72 hours after a person discovers or receives notice from the District.

3. Positive Hose-end Shutoff - All garden and utility hoses shall be equipped with a positive hose-end shutoff nozzle.

4. Vehicle Washdown - Vehicles, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer shall be cleaned only by use of a hand-held bucket or a hand-held hose with a shutoff nozzle device.

5. Restaurant Equipment - Restaurants are required to use water-conserving dish washing spray valves in all food preparation and utensil cleaning areas.

6. Water Fountains and Decorative Water Features – Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited

7. Single Pass Cooling Systems - Installation of single pass cooling systems in buildings requesting new water service is prohibited.

5.17. Water Supply Shortage or Water Emergencies

"Water Supply Shortage" is a condition when Camrosa Water District determines, in its sole discretion, that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. A "Water Emergency" is a condition resulting from some catastrophic event or events, which cause or threaten to cause an impairment, reduction, or severance of the district's water supply or access to its water supplies in a manner that may result in district's inability to meet ordinary water demands for potable water service. In the event of an imminent inability of the District to

meet ordinary water demands for a period beyond what can reasonably be considered routine system repairs the General Manager shall report to the Board of Directors on the extent, estimated duration, cause, and estimated severity of the event or events leading to the water supply shortage or water emergency and by resolution the Board of Directors may declare a Water Supply Shortage or Water Emergency and activate one or more of the following emergency provisions of this ordinance:

Stage One Water Supply Shortage or Water Emergency

The goal of a stage one water supply shortage or water emergency declaration is a 10% potable water demand reduction to preserve water supplies for district and or the region until the emergency has ended. The district shall notify its customers via newspaper, radio, television and direct mail or by any other means determined by the district to be prudent that a Water Supply Shortage or Water Emergency has been declared and that the District is requesting all customers to reduce water use by 10%. In addition to the prohibited uses of water outlined in Section 5.14, the following water conservation requirements apply during a declared Stage One Water Supply Shortage or Water Emergency;

1. Leaks - No person may permit leaks of water that he/she has the authority to eliminate. Any detected leak, break or malfunction shall be corrected within 48 hours after a person discovers or receives notice from the District.

2. Wash-Down of Hard or Paved Surfaces – Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by with a hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine, or a low-volume high-pressure water broom.

3. Drinking Water Served Upon Request Only – Eating or drinking establishments, including but not limited to a restaurant, hotel, café, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.

4. Limits on Watering Durations – Watering of lawns, landscape or other vegetated area with potable water is limited to non-peak demand times and only when necessary. Use of a hand held hose with positive shutoff nozzle; bucket or micro irrigation systems/equipment may be

required.

5. Limits on Watering Hours - Watering or irrigating of lawn, landscape or other vegetated area with potable water may be prohibited between the hours of 9:00 a.m. and 5:00 p.m. on any day.

Stage Two Water Supply Shortage or Water Emergency

The goal of a stage two water supply shortage or water emergency declaration is a 20-30% reduction in potable water demands while preventing the loss of property and protecting the health and safety of the community and region. The district shall notice all of its customers via newspaper, radio, television and direct mail or by any other means determined by the district to be prudent that a Water Supply Shortage or Water Emergency has been declared and that the District is requesting customers to reduce water use. In addition to the prohibitions listed in the Stage One Water Supply Shortage or Water Emergency and the prohibited uses of water in Section 5.14 above, the following water conservation requirements to prudently preserve water supplies shall be observed;

1. Leaks - No person may permit leaks of water that he/she has the authority to eliminate. Any detected leak, break or malfunction shall be corrected within 24 hours after a person discovers or receives notice from the District.

2. Limits on Watering Days – Water or irrigating of landscape or other vegetated area with potable water may be limited to three days per week on a schedule established and posted by the District.

3. Limits on Filling Residential Swimming Pools & Spas – Use of water to fill or refill swimming pools and spas may be limited to maintain the level of water only when necessary. Draining of pools and spas or refilling shall be done only for health or safety reasons.

4. Substitution of Non-potable water - No person shall permit the outdoor use of potable water for irrigation or dust abatement where non-potable or recycled water is available.

Stage Three Water Supply Shortage or Water Emergency

The goal of a stage three water supply shortage or water emergency is to reduce potable water demands by 30-50% while protecting the health and safety of the community and the region. The district shall notice all of its customers via newspaper, radio, television and direct mail or by any other means determined by the district to be prudent that a Water Supply Shortage or Water Emergency has been declared and that the District is requesting customers to reduce water use. In addition to the actions and requirements of a stage two emergency and the prohibited uses of water in outlined in Section 5.14 above the following water conservation requirements to prudently preserve water supplies shall be observed;

1. Irrigation restrictions – Watering or irrigation of lawn, landscape or other vegetated area with potable water may be prohibited by the Board.

2. New Potable Water Service – No new potable water service will be provided, no new temporary meters or permanent meters will be provided and no statements of immediate ability to serve or provide potable water service will be issued, except as approved on an individual review by the District.

3. Other Prohibited Uses – The District may implement other water use requirements as determined by the District to meet water supply shortage or water emergency conditions.

Other Prohibited Uses – The District may implement other water use requirements as determined by the District to meet water supply shortage or water emergency conditions.

Table 31 below summaries the shortage stages and conditions and expected response in each case.

Table 31. Water Supply Shortage Stages & Conditions		
Stage	**Water Supply Condition and Staged Responses**	**% Reduction**
One	Condition: Total net supply potable supply (imported and local sources) at 90% of firm supply (e.g. loss of a local groundwater source). Response: Voluntary reduction to preserve water supplies.	10%
Two	Condition: Total net supply potable supply (imported and local sources) at 70% to 80% of firm supply (e.g. loss of multiple groundwater sources or a limitation in the availability of imported water). Response: Mandatory reduction to prevent property loss & protect health & safety of community.	20-30%
Three	Condition: Total net supply potable supply (imported and local sources) below 70% of firm supply (e.g. loss of all groundwater sources or significant reduction in the availability of imported water). Response: Mandatory reduction to protect health and safety of community.	50%

The ordinance allows the Board of Directors to progress through three stages of action in the event of a water shortage emergency. Each stage conserves progressively more water from 10% in Stage 1 to 50% in Stage 3. Since all water delivered by the District is metered both as production supply and as delivered to customers, actual reductions can be measured over time.

Emergency stages are declared by resolution of the Board. An attached draft resolution is attached as Appendix D. The ordinance is specifically written to preserve the Board's discretion to prescribe rates, fees, charges and penalties at the time the emergency is declared. This ensures that the charges will be set appropriately considering the circumstances of the emergency and prevailing factors that would influence the effectiveness of such measures.

3. Estimated three-year Minimum Water Supply

Groundwater in the District Service Area is pumped at rates that are sustainable even in multiple-dry year scenarios. Sufficient water is available from imported sources, and levels of non-potable irrigation water available remain constant, as displayed in Table 32. For these reasons, the District's ability to provide water in multiple-dry year scenarios is not adversely affected.

Table 32. Three-Year Estimated Minimum Water Supply				
Source	**2011**	**2012**	**2013**	**Normal**
Imported Water	7,900	7,900	7,900	7,900
Groundwater	6,998	6,998	6,998	6,998
Non-Potable Irrigation Water	10,336	10,336	10,336	10,336
Total	**25,234**	**25,234**	**25,234**	**25,234**

4. Emergency Response Plan

The District maintains an Emergency Response Plan, separate from this Urban Water Management Plan that outlines procedures necessary to respond to emergency disasters. The purpose of that plan is to:

- Minimize damaging effects of natural or man-made disasters on the water production, water distribution, sewage collection and sewage treatment systems of Camrosa Water District;
- Restore those systems to working order as quickly as possible in the event of disasters,
- Provide local, area and state assistance where and when required during and after disasters as directed by the Ventura Operational Area Emergency Operations Center; and,
- Implement training procedures by going through mock exercises to make certain all employees are well versed in their roles.
- Pursuant to the Public Health Security and Bio-Terrorism Preparedness and Response Act of 2002, Camrosa Water District conducted a vulnerability assessment and submitted a certified copy of that assessment to the U.S. Environmental Protection Agency in June 2004. The confidential report identified known vulnerabilities and countermeasures and responses to be implemented to safeguard against this potential threat. This report was in response to an isolated request and has not been updated. Camrosa Water District, however, continues to improve the security and surveillance of all its facilities.

The District's emergency procedures are fully integrated with the Standard Emergency Management System (SEMS) to ensure effective multi-agency and multi-jurisdictional responses to emergencies. Internally, Camrosa uses the Incident Command System (ICS) structure to provide a scalable, flexible response to emergencies.

The ICS provides procedures for designation of an Incident Commander who is ultimately responsible for all operations, planning, logistics, finance and public interface associated with any given emergency. Employee recall lists are published and contact lists for emergency assistance from outside contractors, utility companies, and other agencies have been pre-prepared. The plan fully contemplates full and open cooperation with the public media and individual customers throughout any emergency condition.

In terms of facilities and equipment to meet catastrophic emergencies, nearly 16 million gallons of tank storage is available within the District to provide immediate gravity-powered water service for most of the District in the event of a power outage. The District has two portable diesel backup generators, one in the District Office yard and another semi-permanently positioned at the Conejo Wellfield. A permanent generator is attached to the Tierra Rejada Well, and another permanent generator will be installed at the Woodcreek Well by the end of 2011. The Camrosa Water Reclamation Facility has installed electrical generation equipment to ensure continued operations for extended periods of time and uninterrupted recycled water service. Each District vehicle is equipped with emergency food and water supplies for extended deployment as well as a full set of system plans. An emergency response trailer is also equipped with supplies and equipment to manage emergency field operations. The water system's SCADA system is set up on an independent radio system with solar-powered instrumentation and radio transmission to maintain system monitoring independent of the electrical grid.

The District maintains sufficient reserves to fund most contemplated emergencies. Extensive replacement of infrastructure, in the most catastrophic circumstances, would require additional funding from sources that would need to be determined at the time of the emergency.

Table 33 below summarizes actions in response to emergency conditions that might reasonably occur in the District.

Table 33. Catastrophe Response Actions	
Possible Catastrophe	**Summary of Actions**
Regional Power Outage	▪ Evaluate need to initiate the Incident Command System ▪ Lock off large interruptible service meters ▪ Shift to fixed electrical generators ▪ Position portable electrical generators ▪ Evaluate need to implement water shortage contingency plan
Earthquake, Flood, or Fire - Caused Catastrophic Damage to Camrosa's Water System	▪ Evaluate need to initiate the Incident Command System ▪ Isolate damaged sections of system ▪ Lock off large interruptible service meters ▪ Fill system storage ▪ Shift to electrical generators as necessary ▪ Evaluate need to implement water shortage contingency plan
Interruption of Supply from Water Wholesaler	▪ Evaluate need to initiate the Incident Command System ▪ Fill system storage ▪ Lock off large interruptible service meters ▪ Evaluate need to implement water shortage contingency plan

5. Mandatory Prohibitions

Pursuant to Camrosa Ordinance 40-10, Table 34 below summarizes existing mandatory prohibitions that are part of the existing water shortage contingency plan. Additional measures may be implemented at the discretion of the District Board of Directors.

Table 34. Mandatory Prohibitions	
Examples of Prohibitions	**Stage when Prohibition is Mandatory**
Potable water for street washing	Stages 2 and above
Outdoor potable water use where non-potable irrigation water is available	Stages 2 and above
Dust abatement, car washing, driveway and sidewalk washing	Stages 2 and above
Outdoor potable water use except to prevent the loss of perennial plants or trees	Stage 3

6. Consumption Reduction Methods

Pursuant to Ordinance 40-10, the following table summarizes consumption reduction methods that would be instituted in the staged water shortage contingency planning by the District. Additional measures may be implemented at the discretion of the District Board of Directors.

Table 35. Consumption Reduction Methods		
Consumption Reduction Method	**Stage When Method takes Effect**	**Projected Reduction (%)**
Voluntary Reductions, Public Information	Stage 1	10%
Prohibit aesthetic outdoor water use	Stage 2	20% to 30%
Prohibit all outdoor use except to maintain perennial plants & trees	Stage 3	50%

7. Penalties and Charges

In the event of a water shortage emergency, Ordinance 40-10 contemplates that special rates, fees, and/or penalty fees may be required to meet demand reductions necessary to preserve water supply. Since the circumstances prevailing at the time of the water shortage emergency will affect the management of the emergency, the existing ordinance does not presume that such fees will be applicable nor does it attempt to establish the basis for such penalties or charges in advance of the circumstances of the emergency.

Table 36. Penalties & Charges	
Penalty or Charge	**Stage When Penalty Takes Effect**
Penalty for excess use	TBD at Stages 2 or 3 at the discretion of the District Board of Directors
Charge for excess use	TBD at Stages 2 or 3 at the discretion of the District Board of Directors

8. Non-Potable Water Service

As discussed above, some classes of interruptible water service would be curtailed to meet potable water supply reductions. This section discusses the basis for interruptible water service. All Classes of non-potable service and certain classes of potable water service are interruptible as outlined in the following excerpts from Ordinance 40-10:

> ***4.2.1.2 Agricultural Water Service Classifications***
>
> *Agricultural Water Service is a class of service intended to serve commercial agriculture. This service, unlike Municipal Water Service is interruptible. Agricultural services may be interrupted for extended periods as a result of general water shortages, drought, maintenance requirements, and operational requirements. Agricultural Water Service may not be promptly restored following emergencies. Therefore, Agricultural service shall not be eligible for conversion to the Municipal Service without satisfying all "Will Serve" requirements as set forth in the "Camrosa Water District Will Serve Water Policy".*
>
> ***4.2.1.2.1. Agricultural Irrigation Water Service***
>
> *Agricultural Irrigation Water Service is intended for commercial agricultural properties, which raise food crops, floral crops, nursery crops, or commercial livestock. It is not the intent of this ordinance to classify home gardens, home orchards, or pets as agricultural operations. To be eligible for Agricultural Irrigation Water Service the "Property" must include a minimum of one full contiguous, irrigated acre dedicated to commercial*

agriculture. The "Property" must meet all the general requirements of "Potable Water" service and have a certified backflow prevention device at the meter service.

4.2.1.2.2. Domestic Agricultural Water Service

Domestic Agricultural Water Service is intended for commercial agricultural properties, which raise food crops, floral crops, nursery crops, and commercial livestock where the "Property" includes a dwelling or dwellings in which the residential water requirements are incidental to the agricultural operation. It is not the intent of this ordinance to classify home gardens, home orchards, or pets as agricultural operations. To be eligible for Domestic Agricultural Water Service the "Property" must include a minimum of one full, contiguous, irrigated acre dedicated to commercial agriculture. The "Property" must meet all the general requirements of "Potable Water" service, have a certified backflow prevention device at the meter service, and comply with all "Will Serve" requirements as set forth in the "Camrosa Water District Will Serve Water Policy."

9. Economic Considerations

Any reductions in water use will certainly reduce revenues projected by the District to meet planned expenses. Production costs may increase as a result of higher rates and/or penalties placed on pumped or imported water.

The impact of Stage 1, 2 and 3 emergencies upon revenues was examined in detail and is outlined in Table 37 below.

Table 37. Revenue Impact from Reduced Potable Sales[1]

		Stages of Emergency		
	Average/ Normal Water Year	**Stage 1 10% Cutback**	**Stage 2 30% Cutback**	**Stage 3 50% Cutback**
Water Production Costs				
Import Purchases	$5,908,566	$5,317,709	$4,135,996	$2,954,283
Non-Potable Irrigation Purchases	$550,051	$550,051	$550,051	$550,051
Energy Costs	$974,421	$898,689	$760,824	$653,046
Total Water Costs	**$7,433,038**	**$6,766,449**	**$5,446,871**	**$4,157,380**
Water Revenues				
Potable Water Sales	$8,031,803	$7,228,623	$5,622,262	$4,015,902
Potable Meter Service Charge	$1,518,565	$1,518,565	$1,518,565	$1,518,565
Non-Potable Sales	$1,880,878	$1,880,878	$1,880,878	$1,880,878
Non-Potable Meter Service Charge	$87,921	$87,921	$87,921	$87,921
NP Irrigation Sales	$118,703	$118,703	$118,703	$118,703
NP Irrigation Meter Service Charge	$906	$906	$906	$906
Total Water Revenues	**$11,638,776**	**$10,835,596**	**$9,229,235**	**$7,622,875**
Net from Water Operations	**$4,205,738**	**$4,069,146**	**$3,782,364**	**$3,465,494**

1) Information garnered from CY 2009 Revenues/Expenses

Substantial reductions in revenues resulting from reduced water sales are dampened to a large extent by reductions in imported water purchases. While revenues may be reduced during a Stage 3 Water

Emergency by more than $4 Million compared to a Normal Water Year, water purchase costs are reduced by more than $3 Million, as well. The estimated net revenue reduction would be $740,244. In a single year of water delivery cutbacks, the revenue reductions could be accommodated through the Rate Stabilization Fund and the suspension of Capital Contribution.

The Board of Directors has several options available to maintain financial stability in the event an emergency lasted more than one accounting period.

- Non-capital expenses may be reduced in an attempt to balance reduced revenues.
- The Variation in Water Sales reserve, established to dampen price fluctuations driven by changes in delivered volumes of water and increased production costs, may be used to offset added expenses attributable to a stage 2 or stage 3 water shortage emergency.
- Additional reserves, beyond the Variation in Water Sales reserve may be used to meet costs.
- In the longer term, rates may be restructured to reflect increased costs and/or reduced deliveries.
- Added capital investment may allow accelerated expansion of non-potable supplies or may allow development of lower quality supplies to dampen the need to enter more severe emergency stages.

In all cases, the Board will assess the financial impacts at the point an emergency is declared and will apply the appropriate measures to overcome those impacts.

10. Draft Water Shortage Contingency Resolution

Consistent with Ordinance 40-05, a draft resolution to serve as a model of the Board of Directors declaration of a water shortage emergency and establishing an appropriate emergency stage is attached as Appendix D.

11. Water Use Monitoring Mechanisms

The District meters all water production sources and customer water services. In the event of a water shortage emergency, metering would be the primary means to monitor whether reductions are being met. Production metering is automated, real-time, and measured to the nearest gallon. Given the volume of supply, the metering is converted to acre-feet under normal operations. Production metering would provide a broad measure of overall quantity of use in generalized zones. Customer service metering provides quantification of water use by customer. Meters are typically read monthly, but could be read on a more frequent basis as necessary. Customer meter reads are read to the nearest HCF.

Table 38. Water Use Monitoring Mechanisms	
Mechanisms for Monitoring Actual Reductions	**Type and Quality of Data Expected**
Production Metering	Production Metering: Real time production metering for all sources of supply, computer compiled and generated trend graphs with quantities measured to the gallon and reported in acre-feet
Service Metering	Customer service meters: All water use is metered and in normal operations read monthly. More frequent reading could be implemented to evaluate response to staged reduction plan. Metered services calibrated in HCF.
Interruptible Service	Visual confirmation as needed that locked off meters remain locked off and not providing service
Prohibited Uses	Community monitoring

C. Water Quality

1. Known and Potential Water Quality Issues

The quality of the District's water supply is relatively stable and is not currently threatened by contaminants. The quality of imported water is excellent and relatively constant although a trend of increasing chlorides in the water has been noted in recent years. Increasing chlorides in non-potable irrigation water, as a result, may cause some concern for growers who may irrigate salt sensitive crops. It is difficult, however, to determine if the trend will continue and, because cropping patterns can change, it is equally difficult to determine if there will be any impact as a result.

2. Water Quality Effects on Reliability

Increasing nitrate levels in groundwater may require short-term increases in imported water to blend the nitrates levels down to acceptable DHS levels. However, in the long-term, desalination of supplies pumped form the Santa Rosa Aquifer will ensure that supply remains viable. There are no other contaminant issues involving District groundwater supplies. Therefore, the projected volumes of water available to the District, as described in Table 14 are not expected to be affected by water quality issues.

D. Drought Planning

1. Supply and Demand – All Water Combined

The total water supply, from both potable and non-potable sources in 2015 is expected to be 26,791 AF. That quantity is expected to grow to 30,569 AF by 2035. In terms of the 19,561 AF of supplies available to the District in 2010, supplies will increase by 37% by 2015 and will be approximately 56% above 2010 supply by 2035. Projected normal water year supply for all water combined is presented in Table 39.

Table 39. Projected Normal Water Year Supply: All Water Combined (AF/Y)					
	2015	2020	2025	2030	2035
Projected Supply	27,141	28,130	28,694	29,054	30,569
% of Year 2010 Supply	**139%**	**144%**	**147%**	**149%**	**156%**

Demand within the District will grow at a slower rate, allowing surplus water to be made available for delivery outside the District boundaries. Agreements are already in place to provide surplus non-potable irrigation surface water to PVCWD and out-of-bounds deliveries are expected to expand as additional non-potable demands are brought online. In terms of the demand for 2010, demand is expected to be about 21% higher in 2015 and grow to about 30% above 2010 demand as the University grows and the non-potable system is expanded to Tierra Rejada Valley. As 2010 was a relatively wet year, the District thought it pertinent to develop a normalized year to approximate realistic growth over the planning horizon. Due to the economic situation over the last several years, there has been little growth in the District's Service Area. Therefore, an average of the previous four years, which included one dry, one very dry and one normal year, was assumed to represent an adequate approximation of current normalized annual use. As can be seen in Table 40 below, District demand is expected to increase less dramatically over normalized current use than over actual 2010 use: 6% by 2015 and 14% by full build-out.

Table 40. Projected Normal Water Year Total Demand: All Water Combined (AF/Y)					
	2015	2020	2025	2030	2035
Demand	18,203	18,990	19,464	19,475	19,475
% of 2010 Demand	**121%**	**126%**	**130%**	**130%**	**130%**
% of 2010 Normalized Demand	**106%**	**111%**	**114%**	**114%**	**114%**

Tables 41 through 43 summarize and compare the supply and demand data previously presented in Tables 4-6 and 15 for normal, single-dry and multiple-dry year scenarios. The Supply totals reflect the sum of all sources from Tables 4, 6 and 7, and include both recycled water from both Camrosa's WRF and CamSan's WWTP as well as and non-potable surface water from the Hill Canyon WWTP. Demand totals reflect all normal demands including line loss. The resulting difference represents projected water surplus for each 5-year increment of the planning period.

Using demand factors previous established, single-dry year demand is expected to increase by 6% over normal-year demand and multiple-dry year demand is expected to increase by 14% over normal-year demand. All water supply is expected to remain the same in all scenarios. In all scenarios, the availability of non-potable irrigation water is flat and represents no change in expected indoor demand.

Table 41. Projected Normal Water Year Total Supply/Demand: All Water Combined (AF/Y)					
	2015	**2020**	**2025**	**2030**	**2035**
Supply Totals	27,141	28,130	28,694	29,054	30,569
Demand totals	18,203	18,990	19,464	19,475	19,475
Difference (Supply – Demand)	8,938	9,140	9,230	9,579	11,094
Difference as % of Supply	**33%**	**32%**	**32%**	**33%**	**36%**
Difference as % of Demand	**49%**	**48%**	**47%**	**49%**	**57%**

Table 42. Projected Single Dry Year Total Supply/Demand: All Water Combined (AF/Y)					
	2010	**2015**	**2020**	**2025**	**2030**
Supply Totals	27,141	28,130	28,694	29,054	30,569
Demand totals	19,296	20,129	20,632	20,643	20,643
Difference (Supply – Demand)	7,845	8,001	8,062	8,411	9,926
Difference as % of Supply	**29%**	**28%**	**28%**	**29%**	**32%**
Difference as % of Demand	**41%**	**40%**	**39%**	**41%**	**48%**

Table 43. Projected Multiple Dry Year Total Supply/Demand: All Water Combined (AF/Y)					
	2015	**2020**	**2025**	**2030**	**2035**
Supply Totals	27,141	28,130	28,694	29,054	30,569
Demand totals	20,752	21,648	22,189	22,201	22,201
Difference (Supply – Demand)	6,389	6,482	6,505	6,853	8,368
Difference as % of Supply	**24%**	**23%**	**23%**	**24%**	**27%**
Difference as % of Demand	**31%**	**30%**	**29%**	**31%**	**38%**

2. Supply and Demand – Potable Water

Because the supply of non-potable water available to the District cannot be readily substituted for potable supplies to serve potable demand in case of emergencies or other disruptions of imported potable water service, the projected supply and demand for potable water under various weather scenarios is provided separately from the projected supply and demand for non-potable water. Table 44 displays projected normal water year supplies of potable water, both locally produced and imported.

Table 44. Projected Normal Water Year Supply: Potable Water (AF/Y)

	2015	2020	2025	2030	2035
Supply	12,926	13,501	13,501	13,501	14,173
% of 2010 Supply	**156%**	**162%**	**162%**	**162%**	**171%**

Although the total supply of imported water available to the District is determined by renewable ten-year agreement, the volume that is actually brought into the District is not fixed. Rather, the District imports sufficient water to blend with local supplies to meet expected demand. During the drought that peaked in 1990, that demand was nearly 12,900 AF, but it has not exceeded 8,900 AF in the intervening years. As discussed in Section 4.A, the District does not expect to import more than 7,900 AF/Y even the very driest years. In developing all of the scenarios, therefore, the District has limited imported water to 7,900 AF/Y. See Appendix E for full justification and supporting documentation from Metropolitan.

With increasing amounts of non-potable supply available to satisfy irrigation demand and an aggressive program to expand the non-potable distribution system, demand for potable water is expected to decline from historical levels and remain relatively level, even thought growth will add to the demand. This demand trend reflects continued expansion of non-potable irrigation water use within the District. Table 45 represents projected normal potable demand over the course of the planning horizon.

Table 45. Projected Normal Water Year Total Demand: Potable Water (AF/Y)

	2015	2020	2025	2030	2035
Demand	11,238	10,921	10,585	9,868	9,781
% of 2010 Demand	**136%**	**132%**	**128%**	**119%**	**118%**
% of Normalized Current Year Demand	**108%**	**105%**	**102%**	**95%**	**94%**

Tables 46-48 indicate projected potable supply and demand volumes in normal, single-dry and multiple-dry year scenarios. All three scenarios have a goal of limiting imported water to 7,900 AF, an artificial constraint that can be exceeded if necessary.

Table 46. Projected Normal Water Year Total Supply/Demand: Potable Water (AF/Y)					
	2015	**2020**	**2025**	**2030**	**2035**
Supply Totals	12,926	13,501	13,501	13,501	14,173
Demand totals	11,238	10,921	10,585	9,868	9,781
Difference (Supply – Demand)	1,688	2,580	2,916	3,633	4,392
Difference as % of Supply	**13%**	**19%**	**22%**	**27%**	**31%**
Difference as % of Demand	**15%**	**24%**	**28%**	**37%**	**45%**

Table 47. Projected Single Dry Year Total Supply/Demand: Potable Water (AF/Y)					
	2015	**2020**	**2025**	**2030**	**2035**
Supply Totals	12,926	13,501	13,501	13,501	14,173
Demand totals	11,912	11,576	11,220	10,461	10,368
Difference (Supply – Demand)	1,014	1,925	2,281	3,040	3,805
Difference as % of Supply	**8%**	**14%**	**17%**	**23%**	**27%**
Difference as % of Demand	**9%**	**17%**	**20%**	**29%**	**37%**

Table 48. Projected Multiple Dry Year Total Supply/Demand: Potable Water (AF/Y)					
	2015	**2020**	**2025**	**2030**	**2035**
Supply Totals	12,926	13,501	13,501	13,501	14,173
Demand totals	11,912	11,576	11,220	10,461	10,368
Difference (Supply – Demand)	1,014	1,925	2,281	3,040	3,805
Difference as % of Supply	**8%**	**14%**	**17%**	**23%**	**27%**
Difference as % of Demand	**9%**	**17%**	**20%**	**29%**	**37%**

Sufficient supply is available to meet expected potable demand in normal, single-dry years and multiple-dry years. Because contracts have not been renegotiated for the planning horizon, the District is unsure what Metropolitan and, therefore, Calleguas will do should suppliers exceed their allocations in extended drought conditions

3. Supply and Demand – Non-potable Irrigation water

Ample supplies of non-potable irrigation water are available to meet expected irrigation demands within the District. As new supplies are brought on line, the District will greatly increase the volume of non-potable water available for distribution.

Table 49. Projected Normal Water Year Supply: Non-Potable Irrigation Water (AF/Y)

	2015	2020	2025	2030	2035
Supply	14,215	14,629	15,193	15,553	16,396
% of 2010 Supply	124%	128%	133%	136%	143%

Demand for non-potable supplies are expected to grow as well as this economical supply is made available to ever-widening areas within the District. Table 50 displays projected normal water year total non-potable demand over the course of the planning horizon.

Table 50. Projected Normal Water Year Total Demand: Non-Potable Irrigation Water (AF/Y)

	2015	2020	2025	2030	2035
Demand	7,642	8,800	9,652	10,415	10,415
% of 2010 Demand	113%	130%	143%	154%	154%
% of Normalized Current Year Demand	111%	128%	141%	152%	152%

It was assumed that demand for non-potable irrigation water would increase by 6% in single dry year scenarios. Sufficient non-potable irrigation water is available to serve expected demands in even the driest scenarios and in multiple-dry years, which are projected to see an 18% increase in demand. It is expected that surplus water will continue to be available for delivery outside the district boundaries in even the driest years and multiple-dry year scenarios, as displayed in Tables 51-53.

Table 51. Projected Normal Water Year Total Supply: Non-Potable Irrigation Water (AF/Y)					
	2015	2020	2025	2030	2035
Supply Totals	14,215	14,629	15,193	15,553	16,396
Demand totals	7,642	8,800	9,652	10,415	10,415
Difference (Supply – Demand)	6,114	5,829	5,541	5,138	5,981
Difference as % of Supply	**46%**	**40%**	**36%**	**33%**	**36%**
Difference as % of Demand	**86%**	**66%**	**57%**	**49%**	**57%**

Table 52. Projected Single Dry Year Total Supply/Demand: Non-Potable Irrigation (AF/Y)					
	2015	2020	2025	2030	2035
Supply Totals	14,215	14,629	15,193	15,553	16,396
Demand totals	8,101	9,328	10,231	11,040	11,040
Difference (Supply – Demand)	6,114	5,301	4,962	4,513	5,356
Difference as % of Supply	**43%**	**36%**	**33%**	**29%**	**33%**
Difference as % of Demand	**75%**	**57%**	**49%**	**41%**	**49%**

Table 53. Projected Multiple Dry Year Total Supply/Demand: Non-Potable Irrigation (AF/Y)					
	2015	2020	2025	2030	2035
Supply Totals	14,215	14,629	15,193	15,553	16,396
Demand totals	9,018	10,384	11,389	12,290	12,290
Difference (Supply – Demand)	5,197	4,245	3,804	3,263	4,106
Difference as % of Supply	**37%**	**29%**	**25%**	**21%**	**25%**
Difference as % of Demand	**58%**	**41%**	**33%**	**27%**	**33%**

Section 6 Demand Management Measures

LAW

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

16031 (f) (1) and (2) Describe and provide a schedule of implementation for each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) water survey programs for single-family residential and multifamily residential customers; (B) residential plumbing retrofit; (C) system water audits, leak detection and repair; (D) metering with commodity rates for all new connections and retrofit of existing connections; (E) large landscape conservation programs and incentives; (F) high-efficiency washing machine rebate programs; (G) public information programs; (H) school education programs; (I) conservation programs for commercial, industrial and institutional accounts; (J) wholesale agency programs; (K) conservation pricing; (L) water conservation coordinator; (M) water waste prohibition; (N) residential ultra-low-flush toilet replacement programs.

10631 (f) (3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

10631 (f) (4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

10631 (g) An evaluation of each water demand management measure listed in paragraph (1) subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (!) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

Improving water supply reliability and maintaining its affordability have been ongoing priorities of the District. During the most recent drought, the District was subjected to 30% cutbacks in imported water deliveries and immediately began developing alternative water sources. Camrosa has been a leader among local water Districts in promoting non-potable irrigation water use and has placed 12,000 AF of non-potable water on-line to reduce demand on imported water. In addition to developing new supplies, the District has found it prudent to implement demand management measures as well to ensure long-term reliability.

A. Conservation Programs

Camrosa Water District is committed to implementing water conservation and water recycling programs. As a signatory to the California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding, the District is actively involved in implementing a prescribed set of urban water conservation best management practices (BMPs).

Camrosa Water District has implemented or plans to implement all of the required Demand Management Measures outlined in the CUWCC's BMPs. Annual reports are filed with the CUWCC on activities conducted by the District to effect implementation. Coverage Reports are provided in Appendix B.

On December 24, 2010, DWR approved of Camrosa's Self-Certification Statement regarding the implementation of its Urban BMPs, declaring that Camrosa's implementation is consistent with AB 1420 and, therefore, is eligible to receive water management grant or loan funds (see Appendix F for DWR Certification).

The CUWCC has indicated that should it receive FY2010 BMP Reports from water agencies by May 31, 2011, it would gauge compliance in time to include approval in this 2010 UWMP. When CUWCC certification is received, it will be added as an appendix and will be described in place of this text.

B. BMP Summary

The following is a brief summary some of the implementation actions initiated by the District. In order to satisfy the UWMP Act, specific activity numbers (for such programs as ULFTs and HECW, etc.) will be added. While these are unnecessary should the CUWCC certification be obtained, the fact that as of now that certification has not been submitted (due 5/31/11 as note above), it is in the District's best interest to provide adequate reporting herein as a precautionary measure.

1. Utility Operations Programs

BMP 1.11: Water Conservation Coordinator

While several people contribute to the conservation efforts at the District, Camrosa has a Water Conservation Technician who is responsible for all conservation related programs and implementing the BMPs formulated by the CUWCC. The water conservation program is a line item in the District's budget.

BMP 1.12: Water Waste Prohibition

In December 2008, at the time BMPs were last reported, the District was not in full compliance with this BMP. Since that time, the District has amended its ordinance to upgrade its Water Waste Prohibitions to prohibit use of facilities such as single pass cooling systems and non-circulated water fountains (among other prohibitions) and included the requirement to use dish washing spray valves, and positive hose-end shutoff nozzles. In addition, the District included consumer demand reductions through a staged Water Supply Shortage Plan to accommodate drought or other water supply conditions. The District is now 100% in compliance as a result of the above additions to the water waste prohibitions and Staged Water Supply Shortage Plan.

BMP 1.13: Wholesale Agency Programs

This BMP does not apply to Camrosa.

BMP 1.20: System Water Audits, Lead Detection and Repair

The historical average for unaccounted water for Camrosa Water District is 4.8%, substantially under the observed range of 10-15% as stated in AWWA Manual M32. The District is conscientious about locating and repairing main and service connection leaks when they occur. While the 2005 observed water-loss was 7.5%, this was partially due to pipe ruptures which occurred as a result of severe winter storms, and line loss was only 4.8% in 2010. The District has initiated a process to reduce unaccounted-for water-loss to less than 5% for the planning period covered by this plan. For the annual 2009 CUWCC BMP reporting period, the District will implement and report the AWWA's 3rd Edition M36, *"Water Audits and Loss Control Program"* using AWWA's Water Audit Software.

BMP 1.30: Metering with Commodity Rates

Camrosa has a two-tier rate structure for the water system and all water connections are metered. Camrosa does not intend to implement a volumetric pricing structure for the wastewater system.

BMP 1.40: Conservation Pricing

The District has implemented a rate structure that includes a meter service fee that is fixed by meter size and a tiered commodity rate which increases in proportion to the amount of water used.

2. Educational Programs

BMP 2.10: Public Information Programs

The District actively participates in associations such as the Association of Water Agencies of Ventura County, and the California Urban Water Conservation Council. Literature from these two associations and from Metropolitan Water District and Calleguas Municipal Water District is used in educating the public.

The District participates in the Watershed Coalition of Ventura County Water Use Efficiency Group, which is made up of local water conservation coordinators throughout Ventura County. The Group was just recently organized and is currently investigating the most efficient ways to develop a unified regional message that water conservation and specifically landscape water use efficiency, is an important and necessary component of the region's effort to improve water supply reliability.

The District has developed an effective public outreach program to educate the District's customers about water resources and conservation. Included in the public outreach and education program is an interactive website to provide a resource tool for the customers. In 2008, the District inaugurated its newsletter, "The Independent," as another public outreach/education resource to inform customers of water supply resource challenges and conservation practices. The District also hosts speaker bureaus to inform local community organizations about the challenges facing California and the District regarding water reliability, water quality and the future of water availability and cost. In addition, the District includes water conservation messages in its monthly bills, to remind customers of easy day-to-day water conservation practices and techniques.

Residential Landscape Classes are another public outreach and education forum the District utilizes to educate customers on good water stewardship, in such areas as California-Friendly gardens, landscape design, and irrigation maintenance.

BMP 2.20: School Education Programs

The District has conducted teacher in-service workshops to promote water awareness as part of the school curriculum. Coordinated with Metropolitan, Calleguas Municipal Water District and the City of Camarillo, a teacher resources workshop is hosted annually with the school district to promote Metropolitan's educational materials that meet local elementary and junior high school curriculum. In addition, the District holds an annual art contest with elementary and junior high school students to promote and educate water conservation. The winners are submitted to Metropolitan to be considered as part of the annual "Water Is Life" calendar contest. The District also hosts an annual school assembly called "H_20, Where Did You Go?" to local schools to promote water resource and conservation education.

3. Residential Programs

BMP 3.11: Indoor Water Surveys

Camrosa currently does not offer indoor water surveys to its customers. Based upon past offers of indoor Water Surveys, we have found that Camrosa customers are hesitant to invite District personnel into their homes and the number of surveys requested was extremely low. Instead, the District distributes the California Urban Water Conservation Council's *Practical Plumbing Handbook*, which residents can use to perform self surveys. Camrosa also distributes indoor water saving devices such as low-flow showerheads, faucet aerators, and toilet flappers free of charge at the main office. In addition to the distribution of indoor water saving devices, the District fully participates in Metropolitan Water District's SoCal Water$mart rebate program and advertises the financial rebates for High Efficiency Toilets and High Efficiency Clothes Washers and other water saving rebates for residential water users.

Effective with the next report, the District intends to begin reporting by the Gallons Per Capita Per Day (GPCD) Alternative Conservation Approach. Using this approach, the District will demonstrate full compliance with the following BMP's through the GPCD Alternative Conservation Approach.

BMP 3.12 Outdoor Water Surveys

Camrosa offers outdoor water surveys through a third party vendor to customers who request water surveys. The District has partnered with local water purveyors in a regional landscape survey program, Ventura County Regional Urban Landscape Efficiency Program (VC-Rule). The program is designed to improve irrigation efficiency, conserve water and improve the reliability of Ventura County's water supply. Customers will be offered a landscape survey, direct installation low-precipitation rate nozzles, and either rain gage or weather-based irrigation controller to achieve significant landscape water savings. In addition, the District has partnered with the Ventura County Resource Conservation District to provide large landscape water evaluations with the use of grant funding.

BMP 3.20: Residential Plumbing Retrofit

Low-flow showerheads, faucet aerators, and toilet flappers are available upon request at the District office at no cost. Camrosa distributes Welcome Packets to new residents when new water services are activated Included in the Welcome Packets is information regarding the indoor water saving devices offered to our customers, and Metropolitan's residential rebates for water efficient appliances. These water saving devices are also presented at Residential Landscape Classes.

BMP 3.30: High-Efficiency Washing Machine Rebate Programs

The District participates with Metropolitan in their SoCal Water$mart rebate program which offers High-Efficiency Clothes Washer rebates. In 2008, Metropolitan assumed responsibility of administering the rebate program, and customers now submit applications to, and receive rebates directly from Metropolitan.

BMP 3.40: Residential Ultra Low Flush Toilet (ULFT) Replacement Program

Included in Metropolitan's SoCal Water$mart program are rebates for High-Efficiency Toilets. In 2009, Metropolitan replaced the ULFT rebate program with High-Efficiency Toilets (HETs) as to achieve greater long-term water savings from the HETs.

4. Commercial, Industrial, Institutional

BMP 4.00: Commercial, Industrial & Institutional Water Conservation Program

The District has conducted large landscape water surveys, through the use of outside contractors, for Multi-Family Home Owners Associations. The District promotes Metropolitan's Save-A-Buck rebate program which targets Commercial, Industrial and Institutional customers. Water-efficient devices eligible for rebates include Commercial HETs, Ultra Low Water Urinals, and Zero Water Urinals, Cooling Tower Controllers, Water Brooms, Weather-based Irrigation Controllers, and Rotating Nozzles.

5. Landscape

BMP 5.00: Large Landscape Conservation Programs and Incentives

The District implemented Residential Landscape Class and professional training programs, sponsored by Metropolitan Water District of Southern California, in 1998. The District has a water-efficient California Friendly Demonstration Garden, which was partially funded by Metropolitan's City Makeover grant program. The garden is used during Residential Landscape Classes as a demonstration and has resulted in a number of customers using water efficient plants in their own gardens.

Working with the Resource Conservation District of Ventura County, Camrosa has provided large landscape water surveys to customers who have avocado irrigation systems. These surveys evaluate irrigation systems for ways to improve distribution uniformity.

Metropolitan Water District of Southern California selected Camrosa to participate in a pilot program for weather-based irrigation controllers (WBIC). Customers were offered a free WBIC for the removal and exchange of their existing irrigation controller. The District continues to promote WBICs to customers with large landscapes through the Residential Landscape Class and outreach material.

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APPENDIX A. Announcements and Resolutions

- Resolution 11-04: A resolution of the Board of Directors of Camrosa Water District Adopting the Urban Water Management Plan 2010
- Announcement of Public Hearing
- Proof of Public Hearing

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

Resolution No: 11-04

A Resolution of the Board of Directors
of
Camrosa Water District

Adoption of the 2010 Update of

Camrosa Water District's

Urban Water Management Plan

Whereas, The Urban Water Management Planning Act (Water Code Sections 10631-10633, 10635, 10642 et seq.) requires urban water suppliers providing municipal water directly or indirectly to more than 3,000 customers, or who supply more than 3,000 acre-feet of water annually, to adopt an Urban Water Management Plan; and,

Whereas, The Urban Water Management Planning Act further requires review of the Urban Water Management Plan at least once every five years; and,

Whereas, The Act mandates that the Urban Water Management Plan and amended versions be filed with the California Department of Water Resources; and,

Whereas, The District is an urban supplier of water, serving a population of approximately 27,000; and,

Whereas, the District has therefore, prepared and circulated for public review a draft Urban Water Management Plan; and,

Whereas, a properly noticed public hearing regarding said Plan was held by the Board of Directors on June 8, 2011; and,

Whereas, Camrosa Water District did prepare and shall file said Plan with the California Department of Water Resources by July 1, 2011;

Now, Therefore, Be It Resolved by the Camrosa Water District Board of Directors that the attached 2010 Urban Water Management Plan is hereby adopted this date.

Adopted, Signed and Approved this 8th day of June, 2011.

Al E. Fox, President
Board of Directors
Camrosa Water District

ATTEST:

Frank E. Royer, Secretary
Board of Directors
Camrosa Water District

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

May 5, 2011

Lucy McGovern
City of Camarillo
601 Carmen Dr.
Camarillo, CA 93010

2010 Urban Water Management Plan

The Camrosa Water District (Camrosa) hereby provides public notice that its Draft 2010 Urban Water Management is now available for public review.

Urban Water Management Plan

Camrosa has prepared the Urban Water management Plan (Plan) for submission to the California Department of Water Resources. The document was developed in response to Water Code Sections 10620, 10621, 10631-10635, and 10642 of the Urban Water Management Planning Act. These plans which describe and evaluate reasonable, practical, and efficient water uses, reclamation and conservation activities are to be filed with the California Department of Water Resources every 5 years ending in five or zero.

Public Review Period

The Act requires that prior to adopting the plan the urban water supplier shall make the plan available for public review. As such Camrosa has made the plan available for public review at the Camarillo Public Library, at the Camrosa office as well as the Camrosa Water District website at www.camrosa.com.

Written comments on the Plan are to be submitted by June 5, 2011 to:

Mr. Joe Willingham – Planning and Data Systems Manager
7385 Santa Rosa Road
Camarillo, CA 93012
jwillingham@camrosa.com

Public Hearing

A public hearing on this matter will be held at the Camrosa Board of Directors meeting on June 8, 2011. It is anticipate that the Board of Directors will adopt the Plan at this meeting. This meeting will provide a final opportunity to submit written and/or verbal comments regarding the Plan

Publish May 8^{h} and May 15th of 2011

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

May 5, 2011

City of Thousand Oaks
Dept. of Public Works
2100 Thousand Oaks Blvd.
Thousand Oaks, CA 91362

2010 Urban Water Management Plan

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Mr. Joe Willingham – Planning and Data Systems Manager
7385 Santa Rosa Road
Camarillo, CA 93012
jwillingham@camrosa.com

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Publish May 8^{h} and May 15th of 2011

7385 Santa Rosa Road • Camarillo, CA 93012-9284
Phone: (805) 482-4677 FAX: (805) 987-4797
Website: www.camrosa.com

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

May 5, 2011

Susan Mulligan
Calleguas Municipal Water District
2100 Olsen Road
Thousand Oaks, CA 91360-6800

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7385 Santa Rosa Road
Camarillo, CA 93012
jwillingham@camrosa.com

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Publish May 8^{h} and May 15th of 2011

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

May 5, 2011

Mr. Dave Chakraborty, Dir. of Construction & Operations
CSU Channel Islands
1 University Drive
Camarillo, CA 93012

2010 Urban Water Management Plan

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7385 Santa Rosa Road
Camarillo, CA 93012
jwillingham@camrosa.com

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Publish May 8^{h} and May 15th of 2011

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

May 5, 2011

County of Ventura
Dept. of Public Works
800 S. Victoria Ave.
Ventura, CA 93009

2010 Urban Water Management Plan

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Camarillo, CA 93012
jwillingham@camrosa.com

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Publish May 8^{h} and May 15th of 2011

7385 Santa Rosa Road · Camarillo, CA 93012-9284
Phone: (805) 482-4677 · FAX: (805) 987-4797
Website: www.camrosa.com

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

May 5, 2011

Pleasant Valley County Water District
154 S. Las Posas Road
Camarillo, CA 93010

2010 Urban Water Management Plan

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Mr. Joe Willingham – Planning and Data Systems Manager
7385 Santa Rosa Road
Camarillo, CA 93012
jwillingham@camrosa.com

Public Hearing

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Publish May 8^{h} and May 15th of 2011

Certificate of Publication

Ad #275076

In Matter of Publication of:

Public Notice

State of California)
))§
County of Ventura)

I, **Maria Rodriguez**, hereby certify that the **Ventura County Star Newspaper** has been adjudged a newspaper of general circulation by the Superior Court of California, County of Ventura within the provisions of the Government Code of the State of California, printed in the City of Camarillo, for the County of Ventura, State of California; that I am a clerk of the printer of said paper; that the annexed clipping is a true printed copy and publishing in said newspaper on the following dates to wit:

May 07, 14 2011

I, Maria Rodriguez certify under penalty of perjury, that the foregoing is true and correct.

Dated this May 16, 2011, in Camarillo, California, County of Ventura.

Maria Rodriguez
(Signature)

2010 Urban Water Management Plan

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Mr. Joe Willingham –
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7385 Santa Rosa Road
Camarillo, CA 93012
jwillingham@camrosa.com

Public Hearing
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Publish May 7th and May 14th of 2011 Ad No.275076

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that a Public Hearing with the Camrosa Water District Board of Directors will be held:

---Wednesday, June 8, 2011 at 5:00pm---

CAMROSA WATER DISTRICT
7385 Santa Rosa Rd. Camarillo, CA. 93012
(805) 482-4677

The purpose of this Public Hearing is to give the public the opportunity to submit written and or verbal comments regarding the 2010 Urban Water Management Plan (UWMP) for the Camrosa Water District. The UWMP provides a comprehensive assessment of Camrosa's water resource needs for a 20-year planning period and provides the Department of Water Resources with information on present and future water sources and demands.

This document was developed in response to Water Code Sections 10620, 10621, 10631-10635 and 10642 of the Urban Water Management Planning Act. Copies of the UWMP are available for public review at the following locations:

- Camarillo Public Library
- Camrosa Water District office
- www.camrosa.com (Camrosa Water District website)

All written comments on the Plan are to be submitted by June 5, 2011 to:

Mr. Joe Willingham – Planning and Data Systems Manager
7385 Santa Rosa Road
Camarillo, CA 93012
Email: jwillingham@camrosa.com

Frank E. Royer
Secretary / General Manager
CAMROSA WATER DISTRICT BOARD OF DIRECTORS

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

May 5, 2011

ALL INTERESTED PARTIES:

2010 Urban Water Management Plan

The Camrosa Water District (Camrosa) hereby provides public notice that its Draft 2010 Urban Water Management is now available for public review.

Urban Water Management Plan

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Mr. Joe Willingham – Planning and Data Systems Manager
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jwillingham@camrosa.com

Public Hearing

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Publish May 7^{h} and May 14th of 2011

7385 Santa Rosa Road · Camarillo, CA 93012-9284
Phone: (805) 482-4130 · Fax: (805) 987-4797
Website: www.camrosa.com

APPENDIX B. CUWCC Reporting

- *FY2009-10 Coverage Report*

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

Agency: Camrosa Water District **District Name:** Camrosa Water District **CUWCC Unit #:** 35
Retail

Primary Contact Tamara Sexton **Telephone** 805.482.8514 **Email:** tamaras@camrosa.com

Compliance Option Chosen By Reporting Agency:
(Traditional, Flex Track or GPCD)
GPCD if used:

GPCD in 2010	**309**
GPCD Target for 2018	313

Year	Report	Target		Highest Acceptable Bound	
		% Base	GPCD	% Base	GPCD
2010	1	96.4%	368	100%	382
2012	2	92.8%	355	96%	368
2014	3	89.2%	341	93%	355
2016	4	85.6%	327	89%	341
2018	5	82.0%	313	82%	313

Not on Track if 2010 GPCD is ≥ than target

GPCD in 2010	309
Highest Acceptable GPCD for 2010	382

On Track

Reporting Period: Fiscal

Agency: **Camrosa Water District** **District Name:** **Camrosa Water District** **CUWCC Unit #:** **35**
Retail

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

BMP 1.1 Operational Practices

		2009	2010
1.Conservation Coordinator	Name	Donnie Alexander	Donnie Alexander
	Title	Conservation Coordinator/Communications S	Conservation Coordinator/Communications Specialist
	Email		Donniea@camrosa
		On Track	**On Track**
2. Water waste prevention documentation			
	Descriptive File	CamrosaWaterDistrict_35_BMP1_ordinance40-10, CamrosaWaterDistrict_35_BMP1_Ordinac	CamrosaWaterDistrict_35_BMP1_ordinance40-10, CamrosaWaterDistrict_35_BMP1_Ordinace38
	URL	Ordinance 38-09 Establishing A Water Shortage Management Policy, Ordinance 40-10 Rules & Regulations Governing Provision of Water & Sanitary Services (reference Section 5 Conditions of Water Service; 5.3 Water Leaks and 5.17 Water Supply Shortage or Wate	0
	Description	Ordinance 38-09 Establishing A Water Shortage Management Policy, Ordinance 40-10 Rules & Regulations Governing Provision of Water & Sanitary Services (reference Section 5 Conditions of Water Service; 5.3 Water Leaks and 5.17 Water Supply Shortage or Wate	Ordinance 38-09 Establishing A Water Shortage Management Policy, Ordinance 40-10 Rules & Regulations Governing Provision of Water & Sanitary Services (reference Section 5 Conditions of Water Service; 5.3 Water Leaks and 5.17 Water Supply Shortage or Wate
		On Track	**On Track**

Agency: Camrosa Water District **District Name:** Camrosa Water District **CUWCC Unit #:** 35
Retail

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

BMP 1.2 Water Loss Control

2009			
Compile Standard Water Audit using AWWA Software?	Yes	On Track	On Track if Yes, Not on Track if No
AWWA file provided to CUWCC?	yes	On Track	On Track if Yes, Not on Track if No
AWWA Water Audit Validity Score?	71		Info only until 2012
Completed Training in AWWA Audit Method?	yes		Info only until 2012
Completed Training in Component Analysis Process?	Yes		Info only until 2012
Complete Component Analysis?	No		Info only until 2012
Repaired all leaks and breaks to the extent cost effective?	Yes	On Track	On Track if Yes, Not on Track if No
Locate and repair unreported leaks to the extent cost effective.	yes	On Track	On Track if Yes, Not on Track if No
Maintain a record-keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.			Info only until 2012

2010			
Compile Standard Water Audit using AWWA Software?	Yes	**On Track**	On Track if Yes, Not on Track if No
AWWA file provided to CUWCC?	yes	**On Track**	On Track if Yes, Not on Track if No
AWWA Water Audit Validity Score?	82		Info only until 2012
Completed Training in AWWA Audit Method?	yes		Info only until 2012
Completed Training in Component Analysis Process?	Yes		Info only until 2012
Complete Component Analysis?	Yes		Info only until 2012
Repaired all leaks and breaks to the extent cost effective?	Yes	**On Track**	On Track if Yes, Not on Track if No
Locate and repair unreported leaks to the extent cost effective.	yes	**On Track**	On Track if Yes, Not on Track if No
Maintain a record-keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.			Info only until 2012

Agency: **Camrosa Water District** **District Name:** **Camrosa Water District** **CUWCC Unit #:** **35**

Retail

Provided 7 types of Water Loss Control Info

Leaks Repaired	Value Real Losses	Value Apparent Losses	Miles Surveyed	Press Reduction	Cost of Interventions	Water Saved
0	$ -	$ -	0	Off	$ -	0

Info only until 2012

Agency: Camrosa Water District **District Name:** Camrosa Water District **CUWCC Unit #:** 35
Retail

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

1.3 METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

If signed MOU prior to 31 Dec 1997, On Track if all connections metered; If signed after 31 Dec 1997, complete meter installations by 1 July 2012 or within 6 yrs of signing and 20% biannual reduction of unmetered connections.

	2009		2010		
Exemption or 'At least as Effective As' accepted by CUWCC					
Numbered Unmetered Accounts **2008**	0	On Track	0	On Track	On Track if no unmetered accounts
Metered Accounts billed by volume of use	Yes	On Track	Yes	On Track	Volumetric billing required for all connections on same schedule as metering
Number of CII accounts with Mixed Use meters	46		46		Info only
Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	No		No		Info Only
Feasibility Study provided to CUWCC?	Yes	On Track	No	On Track	On Track if Yes, Not on Track if No
Completed a written plan, policy or program to test, repair and replace meters	Yes	On Track	Yes	On Track	On Track if Yes, Not on Track if No

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

Agency: **Camrosa Water District**
Retail

District Name: **Camrosa Water District**

CUWCC Unit #: **35**

Primary Contact Tamara Sexton

Email: tamaras@camrosa.com

1.4 Retail Conservation Pricing

Metered Water Rate Structure

On Track if: Increasing Block, Uniform, Allocation, Standby Service; Not on Track if otherwise

Customer Class	2009 Rate Type	Conserving Rate?
Single-Family	Increasing Block	Yes
Multi-Family	Increasing Block	Yes
Commercial	Increasing Block	Yes
Institutional	Increasing Block	Yes
Dedicated Irrigation	Increasing Block	Yes
	On Track	

Customer Class	2010 Rate Type	Conserving Rate?
Single-Family	Increasing Block	Yes
Multi-Family	Increasing Block	Yes
Commercial	Increasing Block	Yes
Institutional	Increasing Block Seasonal	Yes
Dedicated Irrigation	Increasing Block Seasonal	Yes
	On Track	

Year Volumetric Rates began for Agencies with some Unmetered Accounts

Info only

Agencies with Partially Metered Service Areas: If signed MOU prior to 31 Dec. 1997, implementation starts no later than 1July 2010. If signed MOU after 31 Dec. 1997, implementation starts no later than 1July 2013, or within seven years of signing the MOU,

Agency: **Camrosa Water District** District Name: **Camrosa Water District** CUWCC Unit #: **35**

Retail

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

Adequacy of Volumetric Rates) for Agencies with No Unmetered Accounts

Customer Class	2009 Rate Type	2009 Volumetric Revenues $1000s	2010 Rate Type	2010 Volumetric Revenues $1000s
Single-Family	Increasing Block	$ 4,652	Single-Family	$ 4,971
Multi-Family		$ 460		$ 377
Commercial		$ 602		$ 635
Institutional		$ 411		$ 449
Dedicated Irrigation		$ 823		$ 1,051
Fire Lines		$ 0		$ 2,317
Agricultural		$ 2,353		$ 5
Total Revenue Commodity Charges (V):		$ 9,302		$ 9,805
Total Revenue Fixed Charges (M):		$ 1,243		$ 1,490
Calculate: V / (V + M):		88%		87%
		On Track		On Track
Canadian Water & Wastewater Rate Design Model Used and Provided to CUWCC		No		No
If Canadian Model is used, was 1 year or 3 year period applied?				

Agency Choices for rates:

A) Agencies signing MOU prior to 13 June2007, implementation starts 1 July2007: On Track if (V / (V + M) ≥ 70% x .8 = **56% for 2009** and 70%x0.90 = **63% for 2010**; Not on track if (V / (V + M)) < 70%;

B) Use Canadian model.

Agencies signing MOU after 13June2007, implementation starts July 1 of year following signing.

Agency: Camrosa Water District
Retail

District Name: Camrosa Water District

CUWCC Unit #: 35

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

Wastewater Rates

	2009		2010
Does Agency Provide Sewer Service?	yes	If 'No', then wastewater rate info not required.	Yes

Customer Class	2009 Rate Type	Conserving Rate?	Customer Class	2010 Rate Type	Conserving Rate?
Other	Non-Volumetric Flat	No	Other		
Other					
Other					
Other					
Other				Non-Volumetric Flat	No
	Not on Track			Not on Track	

On Track if: 'Increasing Block', 'Uniform', 'based on long term marginal cost' or 'next unit of capacity'

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

Agency: Camrosa Water District **District Name:** Camrosa Water District **CUWCC Unit #:** 35

Coverage Report Date: May 19, 2011

Primary Contact Tamara Sexton **Telephone** #N/A **Email:** tamaras@camrosa.com

BMP 2. EDUCATION PROGRAMS

BMP 2.1 Public Outreach Actions Implemented and Reported to CUWCC

	2009	2010	
1) Contacts with the public (minimum = 4 times per year)	5	3	
2) Water supplier contacts with media (minimum = 4 times per year, i.e., at least quarterly).	4	4	
3) An actively maintained website that is updated regularly (minimum = 4 times per year, i.e., at least quarterly).	Yes	yes	All 6 action types implemented and reported to CUWCC to be 'On Track')
4) Description of materials used to meet minimum requirement.	Newsletter articles on conservation Website Newsletter articles on conservation Select a public contact News releases Select a public contact News releases Select a type of media contact Select a type of media contact Select a type of media contact	Newsletter articles on conservation Website Newsletter articles on conservation Select a public contact News releases Select a public contact News releases Select a type of media contact Select a type of media contact Select a type of media contact	
5) Annual budget for public outreach program.	$ 137,950	$ 164,200	
6) Description of all other outreach programs	Description is too large for text area. Data will be stored in the BMP Reporting database when online.	Description is too large for text area. Data will be stored in the BMP Reporting database when online.	
	OnTrackfor 5 Actions	**OnTrackfor 5 Actions**	

Agency: Camrosa Water District **District Name:** Camrosa Water District **CUWCC Unit #:** 35

Coverage Report Date: May 19, 2011

CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

Foundation Best Management Practices for Urban Water Efficiency

2.2 School Education Programs Implemented and Reported to CUWCC

	2009	2010	
Does a wholesale agency implement School Education Programs for this unility's benefit?	Yes	Yes	
Name of Wholesale Supplier?	Calleguas Municipal Water District, Metropolitan Water District of Southern	Calleguas Municipal Water District, Metropolitan Water District	
1) Curriculum materials developed and/or provided by agency	Admiral Splash & All About Water. These materials contain experiments & activities in water quality, water distribution, water resources, earth science and the water cycle.	Project WET	Yes/ No
2) Materials meet state education framework requirements and are grade-level appropriate?	Yes	Yes	All 5 actions types implemented and reported to CUWCC to be 'On Track'
3) Materials Distributed to K-6?	yes	Yes	
Describe K-6 Materials	"Admiral Splash" & "All About Water". These materials contain experiments & activities in water quality, water distribution, water resources, earth science and the water cycle.	"Admiral Splash" & "All About Water". These materials contain experiments & activities in water quality, water distribution, water resources, earth science and the water cycle.	Describe materials to meet minimum requirements
Materials distributed to 7-12 students?	No	No	Info Only
4) Annual budget for school education program.	$ 4,300	$ 3,000	
5) Description of all other water supplier education programs			0
	See Wholesale Report	See Wholesale Report	
	0	1	
	On Track	On Track	

STATE OF CALIFORNIA -- THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

December 24, 2010

Ms. Tamara Sexton
Business Services Manager
Camrosa Water District
7385 Santa Rosa Road
Camarillo, California 93012-9284

Dear Ms. Sexton:

The Department of Water Resources (DWR) has reviewed the Camrosa Water District's (CWD) Self-Certification Statement – Tables 1 and 2 submitted on December 6, 2010, regarding implementation of the Urban Best Management Practices (BMPs).

The purpose of DWR's review is to determine eligibility of CWD to receive water management grant or loan funds. DWR has followed the *Draft AB 1420 Compliance Requirements* dated June 1, 2009. For detailed information, please visit http://www.water.ca.gov/wateruseefficiency/finance/.

Based on DWR's review of the information in Tables 1 and 2, CWD has and is currently implementing the BMPs consistent with AB 1420 and, therefore, is eligible to receive water management grant or loan funds.

DWR reserves the right to request additional information and documentation, including reports from CWD to substantiate the accuracy of the information provided in Tables 1 and 2. DWR may reverse or modify its eligibility determination and notify you and the funding agency if inaccuracies are found in the supporting documentation or in Tables 1 and 2.

If you have any questions, please contact me at (916) 651-7025 or Jodi Evans at (916) 651-7026.

Sincerely,

Fethi BenJemaa
Ag Water Use Efficiency Section Chief

APPENDIX C. Camrosa Water District Ordinance 40-10

- CWD Ordinance 40-10 – Rules and Regulations Governing the Provision of Water and Sanitary Services (Adopted April 7, 2010)
    - Also submitted electronically

CAMROSA WATER DISTRICT

BUILDING WATER SELF-RELIANCE

Ordinance 40-10

Rules and Regulations

Governing
The Provision of

Water and Sanitary Services

Adopted:

April 7, 2010

ORDINANCE 40-10

An Ordinance of the Camrosa Water District

Repealing Ordinance 40-09B

And Establishing Rules and Regulations

Governing the Provision of

Water and Sanitary Services

The Board of Directors of the Camrosa Water District do ordain as follows on pages 2 through 28, attached:

By Motion of Director _____, Second by Director_____, this ordinance is

ADOPTED, SIGNED, AND APPROVED this April 7, 2010

Al E. Fox, President
Board of Directors
CAMROSA WATER DISTRICT

ATTEST:

Frank E. Royer, Secretary
Board of Directors
CAMROSA WATER DISTRICT

Table of Contents

Camrosa Water District Rules and Regulations Governing Water and Sanitary Services

1. PURPOSE

The purpose of this ordinance is to establish the terms and conditions of Camrosa's Water and Sanitary Services. These terms and conditions are intended to both assure the individual "Customer" of fair and equitable service and protect the community Camrosa serves from the undue exposure to liability. Water, Sewer, Non-Potable Surface Water and Recycled Water service shall be available only in accordance with the Rules and Regulations contained herein and in conformance with applicable federal, state and local statues, ordinances, regulations and contracts.

2. GENERAL

Water and sanitary service by Camrosa Water District is subject to the availability of facilities, adequate capacity of facilities and compliance with the terms and conditions herein set forth or as may be augmented and set forth in any agreement or permit issued by the District.

3. DEFINITIONS

"Acre Foot of Water" shall mean for the purposes of this Ordinance 43,560 cubic feet of water, which is equal to 435.6 Units or 325,851 gallons of water.

"Customer" shall mean the applicant of record for water service.

"Certified Backflow Device" shall mean for the purposes of this Ordinance equipment, with proper and current certification, designed to prevent the reverse flow of customer's system into district system.

"Cross-connection" shall mean any unprotected connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water or substance that is not or cannot be approved as safe, wholesome, and potable for human consumption.

"Non-Potable Water" shall mean for the purposes of this Ordinance ground water or surface water which is intended for use as irrigation water and other accepted uses for which "Potable Water" is not required.

"Non-Potable Irrigation System" shall mean for the purposes of this Ordinance the transmission and distribution piping and appurtenances, which transport Non-Potable Irrigation Water.

"Potable Water" shall mean for the purposes of this Ordinance water, which is intended for all general uses including human consumption, and therefore, water that meets all primary drinking water standards set forth by the California Department of Public Health.

“Potable Water System” shall mean for the purposes of this Ordinance the transmission and distribution piping and appurtenances, which transport “Potable Water” from the various “Potable Water” sources to the “Customer”.

“Pressure Zones” shall mean for the purposes of this Ordinance subdivisions within the “Potable Water” System, the “Non-Potable Irrigation System”, and the “Recycled Irrigation Water System”, which are hydraulically isolated from the main distribution system and have their own unique hydraulic characteristics and associated energy requirements for delivery.

"Property" shall mean a parcel of land assigned a separate assessors parcel number by the County of Ventura.

“Recycled Water” shall mean for the purposes of this Ordinance, water that is a direct product of a wastewater treatment plant and, therefore, water which is regulated by the State of California as recycled water.

"Recycled Secondary Treated Water" shall mean recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a Most Probable Number (MPN) 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

"Recycled Tertiary Treated Water” shall mean filtered and subsequently disinfected wastewater using a chlorine disinfection process following filtration that provides a contact time (CT) value of not less than 450 milligram-minutes per liter at all times with modal contact time of at least 90 minutes, based on peak dry weather design flow and a median concentration of total coliform bacteria measured in the disinfected effluent that does not exceed an MPN of 2.2. per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacterial does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacterial per 100 milliliters.

“Recycled Irrigation Water System” shall mean for the purposes of this Ordinance the transmission and distribution piping and appurtenances, which transport effluent water from the Camrosa Water Reclamation Facility.

“Surplus Water” shall mean for the purposes of this Ordinance water in excess of the current water demands within the boundaries of the district as determined by Camrosa Water District.

“Unit of Water” shall mean for the purposes of this Ordinance one hundred cubic feet of water, which is equal to 748 gallons.

SECTION 1 - WATER SERVICE

4. ELIGIBILITY FOR WATER SERVICE

Camrosa provides both Potable and Non-Potable Water Service for all indoor and outdoor uses to “Properties” within the District. To be eligible for Water Service the “Customer” shall satisfy both the General Requirements of Water Service and the requirements of the Type and Classification of Water Service listed below.

The District shall devote its best efforts to plan for and, on a case by case basis if necessary, prioritize provision of water services to proposed lower income housing developments pursuant to Government Code Section 65589.7.

Development projects that include lower income housing units shall not be denied approval of an application for service, nor shall conditions be imposed thereon or services reduced which are applied for, unless the District makes specific written findings that the denial, condition or reduction is necessary due to the existence of one or more of the following:

a. Insufficient water supply or insufficient water treatment or distribution capacity

b. A State Department of Public Health order prohibiting new water connections;

c. The proposed development applicant has failed to agree to reasonable terms and conditions.

The District shall not discriminate in any manner when processing and considering requests for services by proposed developments that include lower income housing units.

4.1. General Requirements of Water Service

The “Property” to be served shall be within the Camrosa Water District boundaries. The “Property” shall have an established water connection with a Camrosa water meter of adequate size and capacity, as determined by Camrosa, to serve the “Property’s” water needs without causing undue wear to the Camrosa metering facilities or interfere with Camrosa’s ability to provide reliable service to other “Properties". The “Customer” shall have completed and submitted an application for water service, paid any deposit that may be required as defined in the "Schedule of Rates, Fees and Charges for Water and Sanitary Services". The “Property” shall be free of any delinquent fees and charges from prior accounts established to serve the “Property” and the current “Customer” must establish and maintain an active water service account with Camrosa that is current, free of any delinquent fees and charges.

4.2. Types and Classifications of Water Service

Camrosa provides three types of water service: “Potable” water service, “Non-Potable” water service, and “Recycled” water service. For each type of water service, Camrosa provides water based upon service classification. Specific terms and requirements for water service are based upon the type and classification of the “Customer’s” intended water use. Failure to continuously comply with any requirement for water service may result in re-classification of the service and/or termination of service.

4.2.1. "Potable" Water Service

Camrosa provides "Potable Water" Service for all indoor and outdoor uses. To be eligible for "Potable Water" Service the "Customer" shall satisfy both the *General Requirements of Water Service* contained in Section 4.1 and the requirements of the classification of water use.

4.2.1.1. Municipal Water Service Classifications

Municipal Water Service is water service, which is intended to meet long-term "potable" water needs. It is considered uninterruptible service and, accordingly, must meet "Camrosa Water District Will Serve Policy" requirements.

4.2.1.1.1. Residential Water Service Class I

Residential Water Service - Class I is intended for all general uses both indoor and outdoor. To be eligible for Residential Water Service - Class I the "Property" served must include a dwelling or other structure suitable for occupancy, meet all the general requirements of "Potable Water" service, and have an approved application for "Potable Water" service on record.

4.2.1.1.2. Master Metered Residential Service Class II

Master Metered Residential Service – Class II is intended for all general uses both indoor and outdoor. To be eligible for Master Metered Residential Service the "Property" served must include multiple dwelling units, have a common plumbing system, managed by a formal homeowners association and have water service provided through one or more meters serving the common water system. The "Property" served must meet all the general requirements of "Potable Water" service, and have an approved application for "Potable Water" service on record. In addition, because it is the policy of the Camrosa Water District to encourage wherever practicable the metering of individual residential units, the property must secure the approval of the General Manager in the "Will Serve" process to qualify for Master Metered Service. Camrosa may require a backflow device be installed in order to qualify for this classification.

4.2.1.1.3. Commercial and Industrial Water Service Class III

Commercial and Industrial Water Service – Class III is intended for all general uses both indoor and outdoor for the purpose of providing service to privately operated services, manufacturing, or other business activities. To be eligible for Commercial and Industrial Water Service the "Property" served must possess an active conditional use permit, business license, or other evidence that the local land use jurisdiction recognizes the operation as a commercial or industrial enterprise. The primary water use must be a use other than irrigation. The "Property" must also meet all the general requirements of "Potable Water" service, have a certified backflow prevention device at the meter service, and have an approved application for Commercial and Industrial Water Service on record.

4.2.1.1.4. Public Water Service Class IV

Public Water Service – Class IV is intended for all general uses both indoor and outdoor for public services, such as public schools, recreation facilities, hospitals, government administrative services, and public safety services. To be eligible for Public Water Service the "Property" served must be publicly operated, exempt from property tax, and the primary water use must be a use other than landscape irrigation. The "Property" must also meet all the general requirements of "Potable Water" service, have a certified backflow prevention device at the meter service, and have an approved application for "Potable Water" service on record.

4.2.1.1.5. Municipal Irrigation Water Service Class V

Municipal Irrigation Water Service – Class V is intended for all general landscape irrigation needs where the primary use of water is to maintain large turf areas and other landscape for parks, golf courses, common areas, medians, open spaces and similar uses. To be eligible for Municipal Irrigation Water Service the "Property" served must meet all the general requirements of "Potable Water" service, have a certified backflow prevention device at the meter service, and have an approved application for "Potable Water" service on record.

4.2.1.1.6. Fire Service Class VI

Fire Service – Class VI is intended to provide water for private fire flow needs either within a private complex to which Camrosa does not provide public fire hydrants or for supplementary indoor fire flows. To be eligible for Fire Service the "Property" serviced must maintain a separate and isolated fire service water system and, rather than a conventional water meter, the service must include a fire flow detector meter that will detect the use of water on the fire flow system. Use of water through the fire flow system for other than fire protection shall disqualify the service from fire service classification and require compliance with a conventionally metered municipal service classification. The "Property" must also meet the general requirements of "Potable Water" service, have a certified backflow prevention device at the meter service, and have an approved application for "Potable Water" service on record.

4.2.1.2. Agricultural Water Service Classifications

Agricultural Water Service is a class of service intended to serve commercial agriculture. This service, unlike Municipal Water Service is interruptible. Agricultural services may be interrupted for extended periods as a result of general water shortages, drought, maintenance requirements, and operational requirements. Agricultural Water Service may not be promptly restored following emergencies. Therefore, Agricultural service shall not be eligible for conversion to the Municipal Service without satisfying all "Will Serve" requirements as set forth in the "Camrosa Water District Will Serve Water Policy".

4.2.1.2.1. Agricultural Irrigation Water Service

Agricultural Irrigation Water Service is intended for commercial agricultural properties, which raise food crops, floral crops, nursery crops, or commercial livestock. It is not the intent of this ordinance to classify home gardens, home orchards, or pets as agricultural operations. To be eligible for Agricultural Irrigation Water Service the

"Property" must include a minimum of one full contiguous, irrigated acre dedicated to commercial agriculture. The "Property" must meet all the general requirements of "Potable Water" service and have a certified backflow prevention device at the meter service.

4.2.1.2.2. Domestic Agricultural Water Service

Domestic Agricultural Water Service is intended for commercial agricultural properties, which raise food crops, floral crops, nursery crops, and commercial livestock where the "Property" includes a dwelling or dwellings in which the residential water requirements are incidental to the agricultural operation. It is not the intent of this ordinance to classify home gardens, home orchards, or pets as agricultural operations. To be eligible for Domestic Agricultural Water Service the "Property" must include a minimum of one full, contiguous, irrigated acre dedicated to commercial agriculture. The "Property" must meet all the general requirements of "Potable Water" service, have a certified backflow prevention device at the meter service, and comply with all "Will Serve" requirements as set forth in the "Camrosa Water District Will Serve Water Policy".

4.2.1.3. Temporary Service

Temporary Water Service is service intended for "Customers" having short-term water use needs.

4.2.1.3.1. Temporary Construction Water

Construction water is intended for "Customers" that may need water for dust abatement, general construction site use, and other construction related needs. The "Property" shall meet all the general requirements of "Potable Water" service; a site, approved by Camrosa, shall be specified for installation of a Temporary Meter Service; the temporary meter installed; suitable backflow prevention techniques, approved by Camrosa, are employed and the "Customer" shall have completed and submitted an application for Construction Water Service. Construction Water Service shall be for a term no longer than six (6) consecutive months. The General Manager may authorize longer terms on a case-by-case basis.

4.2.1.3.2. Temporary Municipal Water

Temporary Municipal Water is intended for "Customer's" having a short term need for "Potable Water" service. Examples of such short-term needs are special events, community sponsored functions, which may require water service for a period not to exceed 30 days. The General Manager, on a case-by-case basis, shall determine the requirements and conditions of such service and may authorize longer terms on a case-by-case basis.

4.2.1.3.3. Temporary Agricultural Water

Temporary Agricultural Water Service is intended to provide short-term water service to agriculture operations, which do not have service to the "Property" and require water to supplement the primary water source for a term not to exceed one (1) year.

4.2.1.3.4. Temporary Contractual Water

The Board of Directors may, from time to time, authorize water service on a temporary basis for a term and under conditions set forth by special contract.

4.2.1.4. Emergency Water Service

Emergency Water Service is intended to provide water for the protection of the health, safety and/or property for a "Property" or "Customer" unable to satisfy the requirements and conditions of "Potable Water" service. Emergency service may be provided only after Camrosa has received a complete application for Emergency Water Service from a "Customer" for a specific "Property", has determined that the situation warrants an emergency determination and all fees and charges have been paid. Camrosa shall determine any additional terms and conditions as established in the Camrosa "Schedule of Rates, Fees and Charges for Water and Sanitary Services".

4.2.1.5. Surplus Water - Out of boundary service

Surplus water may be served for any useful purpose outside the boundaries of the District by special agreement as authorized by the Board of Directors.

4.2.2. "Non-Potable Water" Service

Camrosa provides "Non-Potable Water" for a variety of irrigation, industrial, and commercial purposes. All non-potable service is interruptible due to non-availability of water, system maintenance requirements or operational requirements. To be eligible for "Non-Potable Water" Service the "Customer" shall satisfy the *General Requirements of Water Service* contained in Section 4.1, the "Property" to be served must either have no potable service or have a certified backflow prevention device on the potable service and a separate non-potable plumbing system with no existing or potential cross-connections. "Customers" must have a beneficial use for "Non-potable Water" approved by Camrosa and meet the requirements of the specific "Non-potable Water" classification of water use.

4.2.2.1. "Non-Potable Water" Classifications

The following outlines the classifications of non-potable service available from Camrosa Water District. Qualifications and requirements for use of "Non-potable Water" by individual residents may require State or County Department of Public Health prior approval before Camrosa may provide service. In addition, State or County Departments of Public Health or Camrosa may require periodic inspections of privately operated Non-Potable Irrigation Systems to assure that no cross-connections exist.

4.2.2.1.1. Commercial Agricultural - Class I

Commercial Agricultural - Class I is intended for general irrigation purposes on lands requiring water to irrigate commercial crops. To receive water under this classification, the lands must be primarily used for production of commercial crops.

4.2.2.1.2. Landscape Irrigation - Class II

Landscape Irrigation - Class II is intended for commercial operations, public landscaping such as public parks, medians, playing fields and schools, and common-area landscaping needs of homeowners associations where large amounts of irrigation water are needed to maintain turf areas or other landscaping. To qualify for this class, the property must have access to the non-potable water system, have an approved backflow prevention device, must be free of any cross-connections between the potable and non-potable systems and must be primarily in turf or other high-water-demand landscaping.

4.2.2.1.3. Residential Landscaping - Class III

Residential Landscaping – Class III is intended for irrigation of landscape, gardens, orchards and other appropriate outdoor water uses. To be eligible for Non-potable Residential Water service the property served must have access to the non-potable water system, have an approved backflow prevention device owned and maintained by the district on the potable water service to the property, the property must be free of any cross-connections between the potable and non-potable systems, meet all the general requirements of non-potable water service, have an approved application for non-potable water service on record and have paid all applicable fees and charges for non-potable water service.

4.2.2.1.4. Temporary Construction Water – Class IV

Temporary Construction Water - Class IV is intended for uses related to general construction such as dust abatement, compaction, and roadway cleaning. To be eligible for Class IV Non-Potable service a construction site must (1) have access to a non-potable water supply; (2) be permitted by Camrosa for use of “Non-potable Water”; (3) the “Customer” shall make deposits and pay any special fees and charges as established by the Board of Directors; and (4) “Customer” shall agree to comply with all State and County Department of Public Health requirements for uses of “Non-potable Water”.

4.2.2.1.5. Commercial Agricultural – Class VI

The District has entered into separate agreements for delivery of non-potable water and may again enter into such agreements. This class is intended for lands requiring large amounts of water to irrigate commercial crops and have contractual commitments with Camrosa for long-term Non-Potable Irrigation Water Service. Minimum requirements for Class I service are: (1a) the parcel served is a minimum of 20 acres; or (1b) the parcel is joined with a larger parcel totaling 20 acres and is considered part of the larger parcel's operation as determined by Camrosa; (2) the lands are primarily used for production of commercial crops; (3) the owner of the land has endorsed, submitted, and secured approval of a Non-Potable Irrigation Service Agreement with Camrosa Water District on or before December 31, 1994.

4.2.3. "Recycled Water" Service

Camrosa provides "Recycled Water" for a variety of irrigation, industrial, and commercial purposes. The "Customer" must have a beneficial use for "Recycled Water" and meet the requirements of the specific "Recycled Water" use classification of water. To be eligible for "Recycled Water" Service the "Customer" shall satisfy the following; (1) the *General Requirements of Water Service* contained in Section 4.1 above; (2) have available and agree to operate an approved Recycled Water Facility in accordance Ordinance with 41-10 – "Standards for Maintenance and Operation of Recycled Water Facilities"; and (3) execute (or receive an executed copy from the landowner) an approved "Recycled Water Use Agreement" with Camrosa Water District.

4.2.3.1. "Recycled Water" Service Classifications

The following outlines the classifications of non-potable service available from Camrosa Water District. Qualifications and requirements for use of "Non-potable Water" by individual residents may require State or County Department of Public Health prior approval before Camrosa may provide service. In addition, State or County Departments of Public Health or Camrosa may require periodic inspections of privately operated Non-Potable Irrigation Systems to assure that no cross connections exist.

4.2.3.1.1. Commercial Agricultural - Class I

Commercial Agricultural – Class I is intended for lands requiring large amounts of water for irrigation of commercial crops. The water served under this class is "Recycled Tertiary Treated Water", therefore, qualifying for use under minimum restrictions. To receive water under this classification, the lands must be primarily used for production of commercial crops

4.2.3.1.2. Landscape Irrigation Water – Class II

Landscape Irrigation Water - Class II is intended for parks, golf courses, and other large irrigated turf areas. The water provided under this class is "Recycled Tertiary Treated Water", therefore, qualifying for use under minimum restrictions. Minimum requirements are: (1) the land to be served is primarily used for recreational, decorative, or other purposes where large amounts of irrigated turf are required; (2) the land to be served is posted in accordance with Department of Public Health regulations for use of "Recycled Water" in areas open to the general public.

4.2.3.1.3. Limited-use Commercial Agricultural Water - Class III

Limited-use Commercial Agricultural Water - Class III is intended for the irrigation of commercial crops with restrictions on the method of irrigation or crop type as imposed by the Department of Public Health. The water provided is "Recycled Secondary Treated Water" therefore, its uses are restricted.

To receive water under this classification, the lands must be primarily used for production of commercial crops and must meet the requirements set forth in the most current "Camrosa Water District Commercial Agricultural Policy".

4.2.3.1.4. Commercial Agriculture Class IV

Commercial Agriculture - Class IV is intended for lands requiring large amounts of water for commercial crops and contractual commitments with Camrosa for long-term “Recycled Water” Service. The water provided under this class is "Recycled Tertiary Treated Water", therefore, qualifying for use under minimum restrictions. To be eligible for Class IV service, the land to be served must be used primarily for the production of commercial crops and the owner of the land has endorsed, submitted, and secured approval of a “Recycled Water” Service Agreement with Camrosa Water District on or before December 31, 1994.

5. CONDITIONS OF WATER SERVICE

In addition to the general requirements for water service contained in this ordinance, properties with water service agree, upon receiving service, to the conditions contained in this ordinance as it may be amended from time to time by the Camrosa Water District Board of Directors. Failure to meet the conditions contained herein may result in termination of service.

5.1. Cross-Connection Control

The “Customer” shall be responsible for the prevention of cross-connections of the “Customer’s” system with sources of potential contamination. Any “Customer” that has an alternate source of water to the “Property” served by Camrosa regardless of classification shall maintain the water systems separately and shall maintain a certified backflow prevention device at the “Property’s” potable water service meter. At the discretion of the District, Camrosa may require the installation of a backflow device on any service provided by the District. “Customer” required to maintain backflow prevention equipment shall certify the equipment annually except in those instances where the backflow prevention devices are maintained by Camrosa as part of the monthly service fee. In those instances, Camrosa shall test and certify the equipment annually.

5.2. Water Pressure and Surges

Camrosa is not responsible for damages resulting from pressure variations or surges. It is the responsibility of the “Customer” to protect the “Property” from variations in water system pressure and water system surges. The “Customer” shall not operate the "Property’s” system in a manner, which may cause surges to the Camrosa water system.

5.3. Water Leaks

Camrosa is not responsible for water losses due to leaks in the “Property’s” water system. The “Customer” shall maintain the “Property’s” water system to avoid leaks and shall repair leaks promptly.

5.4. Meters, Metering Facilities and Hydrants

The meter and the metering facility are the property of the Camrosa Water District. The outlet, outlet valve and any piping and equipment on the outlet side of the meter are the full responsibility of the “Customer”. All water that passes through the meter is the responsibility of the “Customer”.

5.4.1. Meter Testing

Any customer may demand that the meter through which potable, Non-Potable surface water or recycled water is being furnished be examined and tested by the District for the purpose of ascertaining whether or not it is correctly registering the amount of water being delivered through it. Such demand shall be in writing and shall be accompanied by a deposit equal to the charge for testing as determined by the District. Upon receipt of such demand and deposit, the District will have the meter examined and tested and, if upon such test the meter shall be found to register over two percent (2%) more water than actually passes through it, the meter shall be properly adjusted or another meter substituted therefore, the deposit shall be returned, and the water bill for the current month will be adjusted proportionately. If the meter should be found to register no more than two percent (2%) more water than actually passes through it, the deposit shall be retained by the District to offset the expense of making the test.

5.4.2. Obstruction of or deposit of material in and around Meter Boxes or Hydrants

No person shall place, dispose or deposit or permit the placement, disposal or deposit of oil, toxic hazardous or contaminated liquid or waste, trash, dirt building materials or other substances, objects or obstructions in on or around meter boxes or hydrants. It shall be the responsibility of each customer to prevent meter boxes, District hydrants or other District facilities from becoming obstructed or obscured by the customer's trees, shrubs plants or in any other manner so as to impede their use or access to them or make their location difficult to determine. If such substances, objects or obstructions are not cleaned or removed, or obscure or impede such facilities, the District may, after providing reasonable notice to the customer, accomplish the cleaning and removal and charge the customer for the cost of doing so.

5.4.3. Change of Meter Location

When the location of a meter and service is changed at the "Customer's" request, the cost of making such change will be paid for by the "Customer" in accordance with charges established in the "Schedule of Rates, Fees and Charges for Water and Sanitary Service".

5.5. Resale of Water

In the case where a “Customer” has established a Master Metered account for a property, or where a “Customer” is leasing their property to another and still maintains the water account for the property in the “Customer’s” own name, the “Customer” shall not resell water to others at a volumetric rate higher than the District charges the “Customer”. This section shall apply to all “Customers” within the District except the California State University – Channel Islands.

5.6. Exporting Water

The “Customer” shall not export water from the “Property” assigned service by Camrosa to any other “Property” without the written permission of Camrosa. This prohibition includes other “Property” under the same ownership.

5.7. Water Quality

5.7.1. Potable Water

"Potable Water" provided by Camrosa meets or exceeds all primary drinking water requirements set forth by the California Department of Public Health. Camrosa water does contain minerals that contribute to "hardness". Hardness may result in the accumulation of mineral deposits of water appliances. Camrosa is not liable for any discoloration, spotting or any other damages resulting from the mineral content of the water.

5.7.2. Non-Potable and Recycled Water

Non-Potable and Recycled water are not intended for human consumption. These waters may contain high levels of minerals and salts to which some plants are not tolerant. Camrosa is not responsible for any damages to crops or plants resulting from the use of water delivered by Camrosa.

5.8. Interruptions in Service for System Maintenance

Camrosa may interrupt service from time to time for routine maintenance, repairs, and meter testing. Camrosa is not responsible for any damages to the "Customer's" property or other losses as a result of such interruptions.

5.9. Automatic Fire Sprinkler Service Connections

When an automatic fire sprinkler service connection is installed, the control valve for the sprinkler system will be left closed and sealed until a written order to turn on the water is received from the "Customer". After the water is turned on, the District shall not be liable for damages of any kind that may occur on or to the premises or "Property" therein served due to the installation, maintenance or use of such service connection, or because of fluctuation of pressure or interruption of water supply. Water shall not be used through an automatic fire sprinkler service connection for any purpose other than the extinguishing of fires, or a purpose related thereto.

5.10. Access to District-owned Facilities

Camrosa shall have access to all District-owned meters, pipelines and appurtenant facilities at all times. No person shall willingly obstruct or prevent access to District-owned facilities.

5.11. Right of Inspection of and Access to Customers Premises

By accepting service from the District, the "Customer" agrees that authorized representatives of the District may, at reasonable times, enter upon the "Customer's" premises for the purpose of determining the existence, operation, maintenance, and/or use of:

1. Any plumbing or water piping which may cause, create or permit backflow, back-siphonage or any other condition affecting or likely to affect the purity and/or potability of the water supply furnished by the District;
2. Any private source of water supply which may be connected with the water supply system of the District; or,
3 Any source of pressure, vacuum, contamination, or pollution affecting or likely to affect the purity and/or potability of the water supply furnished by the District.

5.12. Tampering with Metering Facilities

Tampering with any Camrosa facility, which results in damages to the facilities or the loss of water by leakage or meter malfunction, may result in immediate termination of service and both civil and criminal prosecution.

5.13. Beneficial Use of Water

The “Customer” shall use water provided by Camrosa in any manner, which results in reasonable benefit to the “Property” or the “Customer”.

5.14. Prohibition of Water Waste

No person shall cause or permit water under his/her control to be wasted. Willful waste of water may result in additional fees, charges and/or termination of service as directed by the Board of Directors. The following prohibitions are in effect at all times, regardless of whether any declared water supply shortage or water emergency condition is in effect:

1. Gutter Flooding - No person shall cause or permit any water furnished to any property within the District to run or to escape from any hose, pipe, valve, faucet, sprinkler or irrigation device into any gutter or to otherwise escape from the property, if such running or escaping can reasonably be prevented.

2. Leaks - No person shall permit leaks of water that he/she has the authority to eliminate. Any detected leak, break or malfunction shall be corrected within 72 hours after a person discovers or receives notice from the District.

3. Positive Hose-end Shutoff - All garden and utility hoses shall be equipped with a positive hose-end shutoff nozzle.

4. Vehicle Washdown - Vehicles, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer shall be cleaned only by use of a hand-held bucket or a hand-held hose with a shutoff nozzle device.

5. Restaurant Equipment - Restaurants are required to use water-conserving dish washing spray valves in all food preparation and utensil cleaning areas.

6. Water Fountains and Decorative Water Features – Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited

7. Single Pass Cooling Systems - Installation of single pass cooling systems in buildings requesting new water service is prohibited.

5.15. Reasonable Attorney Fees Paid by Customer

In the event an action is commenced in a court of law by the District to collect any obligations incurred by the use of water or sewer service, the "Customer" shall be required to pay reasonable attorney's fees if said action is successful.

5.16. Mandatory use of Non-Potable Surface Water or Recycled Water where Available

Where non-potable or recycled water is available to a property served by Camrosa, the property shall utilize such water in lieu of potable water wherever practicable. Non-Potable surface water or recycled water must be used for construction purposes when available.

5.17. Water Supply Shortage or Water Emergencies

"Water Supply Shortage" is a condition when Camrosa Water District determines, in its sole discretion, that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. A "Water Emergency" is a condition resulting from some catastrophic event or events, which cause or threaten to cause an impairment, reduction, or severance of the district's water supply or access to its water supplies in a manner that may result in district's inability to meet ordinary water demands for potable water service. In the event of an imminent inability of the District to meet ordinary water demands for a period beyond what can reasonably be considered routine system repairs the General Manager shall report to the Board of Directors on the extent, estimated duration, cause, and estimated severity of the event or events leading to the water supply shortage or water emergency and by resolution the Board of Directors may declare a Water Supply Shortage or Water Emergency and activate one or more of the following emergency provisions of this ordinance:

5.17.1. Stage One Water Supply Shortage or Water Emergency

The goal of a stage one water supply shortage or water emergency declaration is a 10% potable water demand reduction to preserve water supplies for district and or the region until the emergency has ended. The district shall notify its customers via newspaper, radio, television and direct mail or by any other means determined by the district to be prudent that a Water Supply Shortage or Water Emergency has been declared and that the District is requesting all customers to reduce water use by 10%. In addition to the prohibited uses of water outlined in Section 5.14, the following water conservation requirements apply during a declared Stage One Water Supply Shortage or Water Emergency;

1. Leaks - No person may permit leaks of water that he/she has the authority to eliminate. Any detected leak, break or malfunction shall be corrected within 48 hours after a person discovers or receives notice from the District.

2. Wash-Down of Hard or Paved Surfaces – Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by with a hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine, or a low-volume high-pressure water broom.

3. Drinking Water Served Upon Request Only – Eating or drinking establishments, including but not limited to a restaurant, hotel, café, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.

4. Limits on Watering Durations – Watering of lawns, landscape or other vegetated area with potable water is limited to non-peak demand times and only when necessary. Use of a hand held hose with positive shut-off nozzle; bucket or micro irrigation systems/equipment may be required.

5. Limits on Watering Hours - Watering or irrigating of lawn, landscape or other vegetated area with potable water may be prohibited between the hours of 9:00 a.m. and 5:00 p.m. on any day.

5.17.2. Stage Two Water Supply Shortage or Water Emergency

The goal of a stage two water supply shortage or water emergency declaration is a 20-30% reduction in potable water demands while preventing the loss of property and protecting the health and safety of the community and region. The district shall notice all of its customers via newspaper, radio, television and direct mail or by any other means determined by the district to be prudent that a Water Supply Shortage or Water Emergency has been declared and that the District is requesting customers to reduce water use. In addition to the prohibitions listed in the Stage One Water Supply Shortage or Water Emergency and the prohibited uses of water in Section 5.14 above, the following water conservation requirements to prudently preserve water supplies shall be observed;

1. Leaks - No person may permit leaks of water that he/she has the authority to eliminate. Any detected leak, break or malfunction shall be corrected within 24 hours after a person discovers or receives notice from the District.

2. Limits on Watering Days – Water or irrigating of landscape or other vegetated area with potable water may be limited to three days per week on a schedule established and posted by the District.

3. Limits on Filling Residential Swimming Pools & Spas – Use of water to fill or refill swimming pools and spas may be limited to maintain the level of water only when necessary. Draining of pools and spas or refilling shall be done only for health or safety reasons.

4. Substitution of Non-potable water - No person shall permit the outdoor use of potable water for irrigation or dust abatement where non-potable or recycled water is available.

5.17.3. Stage Three Water Supply Shortage or Water Emergency

The goal of a stage three water supply shortage or water emergency is to reduce potable water demands by 30-50% while protecting the health and safety of the community and the region. The district shall notice all of its customers via newspaper, radio, television and direct mail or by any other means determined by the district to be prudent that a Water Supply Shortage or Water Emergency has been declared and that the District is requesting customers to reduce water use. In addition to the actions and requirements of a stage two emergency and the prohibited uses of water in outlined in Section 5.14 above the following water conservation requirements to prudently preserve water supplies shall be observed;

1. Irrigation restrictions – Watering or irrigation of lawn, landscape or other vegetated area with potable water may be prohibited by the Board.

2. New Potable Water Service – No new potable water service will be provided, no new temporary meters or permanent meters will be provided and no statements of immediate ability to serve or provide potable water service will be issued, except as approved on an individual review by the District.

3. Other Prohibited Uses – The District may implement other water use requirements as determined by the District to meet water supply shortage or water emergency conditions.

5.18. Declaration of Emergency Stage

The Board of Directors may move from stage to stage as necessary to best manage the water supply shortage or water emergency. Once the water supply shortage or water emergency conditions have subsided and water supplies returned to normal the Board shall by resolution declare an end to the emergency and restore service to pre-emergency conditions.

5.19. Violation of Prohibitions

Violation of any provision of a stage one, two or three emergency may result in fees and charges prescribed in the district's schedule of rates, fees and charges. Repeated violations may result in water capacity restrictions to the property or termination of service

SECTION 2 - FEES AND CHARGES

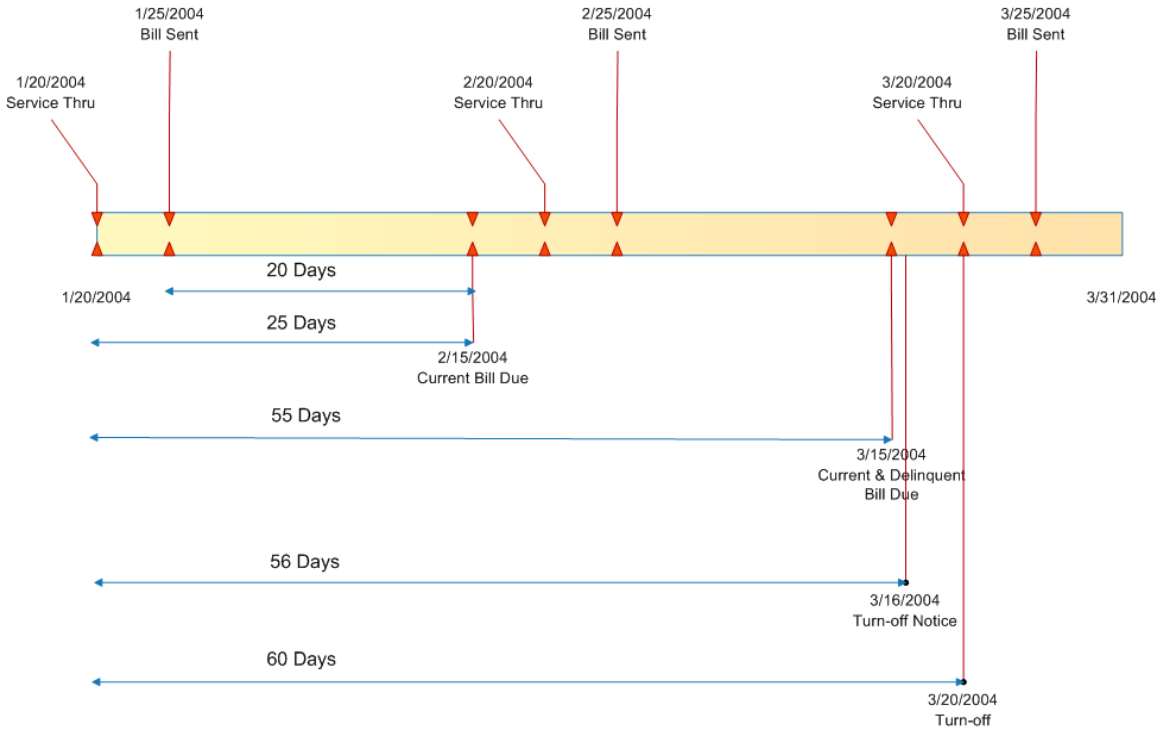
6. WATER SERVICES RATES, FEES, AND CHARGES

Camrosa shall establish, by Board Resolution, a "Schedule of Rates, Fees and Charges for Water and Sanitary Service" after holding a properly noticed public hearing in accordance with Government Code 53756. The schedule for services may cover a period not to exceed five years. The "Schedule of Rates, Fees and Charges for Water and Sanitary Services" may provide for automatic adjustments that pass through to the customer the adopted increases or decreases in the wholesale charge for water established by another public agency. Notice of any automatic adjustments pursuant to the schedule shall be given not less than 30 days before the effective date of the adjustment.

The "Customer" shall pay all assigned rates, fees, and charges for the type and class of service provided in the manner and within the times set forth in this Ordinance and the Camrosa Water District "Schedule of Rates, Fees and Charges for Water and Sanitary Services" as established and amended from time to time by the Camrosa Board of Directors. Failure to make timely payment may result in termination of service upon notice as may be required by law.

6.1. Time and Manner of Payment

All bills and charges for water, sewer, Non-Potable surface water and recycled water service shall be due and payable upon presentation and shall become delinquent if not paid by the date specified on the face thereof. Such bills and charges shall be deemed to be presented upon having been deposited in the United States Mail, postage paid, and addressed to the customer or owner reflected in the records of the District. Payments may be made in person, by mail or by electronic transfer of funds to the District.



The timeline presented above is the normal billing cycle for the District. If an amount billed is not paid within 25 days of date it is presented for payment, the amount shall be considered delinquent. If a delinquent amount is not paid within 55 days from its original date of presentment, the account shall become a candidate for termination and, following such notice and proceedings as may be required by law, the water, Non-Potable surface water and/or recycled water service to the property may be discontinued.

6.2. Delinquent Fees and Charges

Fees may be applied to accounts deemed delinquent. Charges may be applied for noticing the customer with a door hanger and for reconnection of service terminated as a result of delinquency, as provided for in the "Schedule of Rates, Fees and Charges for Water and Sanitary Services." The General Manager is authorized to waive the door hanger fee if, in the judgment of the General Manager, such waiver is in the best interests of the District.

6.3. Property Liens

If, in the judgment of the General Manager, a delinquent account has proven to be uncollectible, a lien against the property served may be established in the amount owing to the District. Reestablishment of service to the property may be withheld until the General Requirements of Water Service are met.

6.4. Pressure Zone Surcharges

Water Services may be subject to surcharges if the areas to be served are above the first hydraulic lift. Zone Surcharges are intended to reflect the actual cost of any additional pumping and shall be reviewed annually to assure that they reflect current costs.

SECTION 3 - SEWER SERVICE

7. SEWER SERVICE GENERAL

The District protects the health, welfare and safety of the local residents by constructing, operating and maintaining a system of local sewers and laterals, trunk sewers and interceptors, and liquid waste treatment and disposal facilities to serve the homes, industries and commercial establishments throughout the District and surrounding environs as required by State and Federal law.

The District shall devote its best efforts to plan for and, on a case by case basis if necessary, prioritize provision of sewer services to proposed lower income housing developments pursuant to Government Code Section 65589.7.

Development projects that include lower income housing units shall not be denied approval of an application for service, nor shall conditions be imposed thereon or services reduced which are applied for, unless the District makes specific written findings that the denial, condition or reduction is necessary due to the existence of one or more of the following:

a. Insufficient sewer treatment or sewer collection capacity;

b. A Regional Water Quality Control Board order prohibiting new sewer connections;

c. The proposed development applicant has failed to agree to reasonable terms and conditions.

The District shall not discriminate in any manner when processing and considering requests for services by proposed developments that include lower income housing units.

7.1. Sewer Service Area

Camrosa Water District has facilities capable of providing Sanitary Service to approximately 50% of its customers. The boundaries of the existing service area are:

1. North of the 101 Freeway to Worth Way and;
2. Calleguas Creek on the West to Morongo Drive on the East.
3. California State University, Channel Islands
4. Casa Pacifica, Las Posadas, Villa Calleguas

Sanitary Service south of the 101 Freeway, and within the Camrosa Water District boundary, is provided by the City of Camarillo while Camrosa provides the Water Service. The only exceptions are listed as #3 and #4 above.

7.2. Demarcation of Sewer Service Responsibilities

7.2.1. Demarcation of District Facilities

For the purpose of defining the location at which District facilities end and private facilities begin, the cleanout on sewer lateral connections to private property, located either just behind the curb and gutter, or just behind the sidewalk, shall serve as the point of demarcation.

7.2.2. Customer Responsibility

The point of demarcation of district facilities shall not serve as the point where obstructions, causing a backup of wastewater within the lateral, cease to be the responsibility of the sewer customer. It is the responsibility of the Customer to maintain clear and free flow in the lateral from their property all the way to the District sewer main. This includes clearing obstructions caused by something flushed or dropped into the lateral or caused by root intrusion from nearby landscaping. Simply causing the obstruction to pass the demarcation point does not then place the responsibility for correction of the problem onto the District. Root intrusion caused by City or County placed trees or shrubs is, likewise, the customers responsibility to correct and then, if so inclined, to file a claim with the appropriate agency.

7.2.3. Liability for Property Damage

The District shall not be liable for damage to private property caused by blockage in a sewer lateral. The District may assume liability only in instances when a backup in the District sewer main causes damage to private property.

7.3. Water Reclamation Policy

The District is committed to a policy of wastewater reclamation and reuse in order to provide an alternate source of water supply and to reduce overall costs of wastewater treatment and disposal. The reclamation of wastewater through wastewater treatment processes may necessitate more stringent quality requirements on industrial waste discharges as the demand for Non-Potable surface water increases. Accordingly, industry is urged to seek recovery and reuse procedures to meet the limitations set in industrial waste discharges rather than those procedures designed solely to meet discharge limitations.

7.4. Eligibility for Sewer Service

The highest and best use of the sewerage system is the collection, treatment and reclamation or disposal of domestic sewage. Connection to the District's facilities by customers within the sewer service area is unrestricted provided the prospective customer has completed the application process, all fees have been paid, the connection meets district construction specifications and the type of discharge is not detrimental to either the collection system or the treatment process.

The use of the sewerage system for industrial waste discharges is subject to regulation by the District. The District shall retain responsibility for final regulation and control of industrial waste discharges into District facilities.

Sewage, liquid waste and industrial waste will be accepted into the sewerage system provided such wastes will not: 1) menace public health, 2) detrimentally affect the local environments, 3) create nuisances such as odors, insects, etc., 4) damage structures, 5) impose excessive collection, treatment or disposal costs on the District, 6) significantly interfere with wastewater treatment processes, 7) interfere with wastewater reclamation processes, 8) exceed quality limits and quantity requirements established by the District.

7.5. Regulation of Sewer Service

The District has adopted *Camrosa Water District Industrial Waste and Sanitary Service Ordinance Regulating and Controlling Sewage Liquid Waste and Industrial Waste Discharges* (as amended from time to time) for the purpose of controlling and regulating sewage, liquid waste and industrial waste discharges directly or indirectly into the sewerage system and disposal works of the Camrosa Water District,

The Ordinance establishes the quality and quantity of discharged wastes; the degree of waste pretreatment required; the issuance of industrial wastewater discharge permits; the establishment of fees and charges; and the establishment of fees, charges, and penalties for violation.

Provisions are made within the Ordinance to regulate industrial waste discharges, to comply with State and Federal government requirements and policies, and to meet increasingly higher standards of treatment plant effluent quality and environmental considerations. The ordinance establishes quantity and quality limitations on sewage, liquid waste and industrial waste discharges where such discharges may adversely affect the sewerage system or the effluent quality. Methods of cost recovery are also established where the industrial waste discharge would impose unreasonable collection, treatment or disposal costs on the District.

*The provisions of "*Camrosa Water District Industrial Waste and Sanitary Service Ordinance Regulating and Controlling Sewage Liquid Waste and Industrial Waste Discharges"*, as amended from time to time, are fully incorporated by reference into these rules and regulations and shall apply to the discharge of all wastes, directly or indirectly, to a public sewer of the District*.

SECTION 4 - CONSTRUCTION SPECIFICATIONS

8. INCLUSION OF SPECIFICATIONS BY REFERENCE

The design and construction of water, Non-Potable surface water, recycled water and sewer lines and other appurtenances within the District's service area shall comply with the published "*Requirements and Specifications for Making Application - Developing Designs and Constructing Water Facilities by Public and Private Contract for Camrosa County Water District*" and "*Rules and Regulations of Camrosa County Water District Establishing General Provisions and Specifications for Design and Construction of Sanitary Sewers and Appurtenances*".

SECTION 5 - IMPLEMENTATION

9. IMPLEMENTATION AND PRIOR RULES AND REGULATIONS

This Ordinance supersedes all prior Ordinances and Resolutions relating to rules and regulations for Potable, Non-Potable and/or “Recycled Water” Services.

SECTION 6 – AUTHORITY FOR IMPLEMENTATION

10. DISCRETIONARY AUTHORITY PROVIDED TO THE GENERAL MANAGER

The General Manager is provided, herein, discretionary authority to interpret this ordinance and implement its provisions. This authority includes establishment of eligibility for service, determination of the availability of facilities and capacity, determination of compliance with this ordinance, application of fees, resolution of billing disputes, and negotiation of agreements. The Camrosa Board of Directors may address unresolved disputes. The decision of the Board of Directors regarding such disputes is final.

APPENDIX D. Draft Resolution Declaring a Water Shortage Emergency

- A Resolution of the Board of Directors of Camrosa Water District Declaring a Water Shortage Emergency & Implementing a Water Shortage Contingency Plan (DRAFT)

CAMROSA WATER DISTRICT
BUILDING WATER SELF-RELIANCE

Resolution No: DRAFT

A Resolution of the Board of Directors
of
Camrosa Water District

Declaring a Water Shortage Emergency & Implementing a Water Shortage Contingency Plan

Whereas, due to [describe circumstances that have limited water supply, e.g. earthquake damage to critical water supply and transmission facilities], the water supply available to Camrosa Water District is reduced; and,

Whereas, Camrosa Water District's Ordinance 40-10, "Rules and Regulations Governing the Provision of Water and Sanitary Services," has provided procedures for the declaration and response to water shortage emergencies; and,

Whereas, the Board of Directors has received, and duly considered, a report on the extent, estimated duration, cause, and estimated severity of the events or events leading to the emergency; and,

Whereas, the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the District's water system to the extent there would be insufficient water for human consumption, sanitation, and fire protection;

Now, Therefore, Be It Resolved, that the Camrosa Water District Board of Directors declares a water shortage emergency condition currently prevails within the area served by the Camrosa Water District; and,

Be It Further Resolved that pursuant to Ordinance 40-10, Section 5.17, the Board of Directors directs the General Manager to implement Stage _____ emergency response ; and,

Be It Further Resolved that the Board of Directors adopts the emergency rates, fees, charges, and penalties, as shown in Attachment A [such rates, fees, etc. to be determined by the Board of Directors at the time of the declaration of emergency].

Adopted, Signed and Approved ***this Xth day of Month, 20XX.***

_____

Al E. Fox, President
Board of Directors
Camrosa Water District

ATTEST:

_____

Richard H. Hajas, Secretary
Board of Directors
Camrosa Water District

APPENDIX E. Metropolitan Allocation Information

- Information from Metropolitan Water District delineating allocations to its member agencies, and from Calleguas Municipal Water District to Camrosa.

web site: www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800 805/526-9323 • FAX: 805/522-5730 • FAX: 805/526-3675

Memorandum

To: Purveyor Managers

From: Don Kendall, General Manager

Date: July 13th, 2009

Re: 2009/2010 Initial Allocation Notice

As you are aware, Metropolitan's Water Supply Allocation Plan (WSAP) became effective July 1st and will remain in effect until June 30th, 2010. In April, given persistent drought conditions and dwindling reserves, Metropolitan's Board announced a Regional Shortage, Level 2 that calls for a 15 percent reduction in wholesale deliveries. In May, Calleguas' Board took formal action to develop and apply supply allocations for each District purveyor consistent with the WSAP (see attached resolution).

In recent months, Calleguas has coordinated with its purveyors to establish individual allocations based on the formula used by Metropolitan to derive allocations for its member agencies. Your agency's initial allocation is attached. It is important to note, that these allocations are not necessarily fixed as actual local supply production during the allocation year will likely lead to adjustments. The WSAP does not penalize those agencies for "extraordinary increased local production" during the allocation year. Calleguas recently submitted a letter to Metropolitan that we believe serves to further clarify this matter and will ensure fair treatment for Calleguas and its purveyors.

To assist in tracking each agency's progress, Calleguas will include a chart of monthly targets vs. actual deliveries in all water billings throughout the allocation year. While Metropolitan will not assess penalties on a monthly basis, closely monitoring our deliveries in this way will provide an early warning signal if demands are trending into a potential penalty scenario. Again, as local supply production will influence Calleguas' final Metropolitan allocation to be determined at the end of the allocation year, we will be contacting those purveyors with access to local supplies to incorporate this data into our tracking charts. Tracking will begin in August for the July 2009 billing period.

With respect to penalties, Metropolitan will assess any applicable penalties following a reconciliation process at the end of the allocation year. A penalty of double Metropolitan's Tier 2 rate in effect at time ($811/af) will be applied to deliveries up to 15 percent above an agency's final allocation. A penalty of quadruple the Tier 2 rate will be assessed on deliveries above 15 percent. Calleguas will not assess any additional penalty, only pass through Metropolitan's to the affected purveyor(s).

As for allocation adjustments, we are preparing our first appeal given changed conditions for some purveyors related to newly annexed areas, lost local supplies, etc. Prior to submitting the appeal, we will follow-up with applicable purveyors to verify our understanding of the circumstances and related data.

Lastly, we are optimistic that a 15 percent reduction is achievable. This is new territory for all of us, but fortunately we expect to have ample time during the year to address any issues that may arise. As always, feel free to either contact Eric Bergh at 805-579-7128 or me at 805-579-7113 if you have any questions on this matter.

Donald R. Kendall

RESOLUTION NO. 1636

RESOLUTION OF THE BOARD OF DIRECTORS
OF CALLEGUAS MUNICIPAL WATER DISTRICT
IMPLEMENTING A WATER SUPPLY
ALLOCATION PROGRAM

WHEREAS, the Board of Directors Calleguas Municipal Water District (District) adopted an Urban Water Management Plan (the Plan) in 1995 in accordance with the requirements of the California Urban Water Management Planning Act (Water Code Sections 10610 et seq; the Act); and the plan was updated in accordance with applicable law and adopted by the Board in 2000; and further updated and adopted on October 5th, 2005;

WHEREAS, the Plan describes actions the District may follow to manage demand and, if necessary, allocate water in response to reductions in available water supplies;

WHEREAS, the State of California is now in its third consecutive year of drought and in each year of the current drought, annual rainfall and the water content in the Sierra snowpack have been significantly below the amounts needed to fill California's reservoir system;

WHEREAS, on February 27th, 2009, Governor Schwarzenegger declared a state of emergency regarding ongoing drought conditions and ordered immediate action to manage the State's dwindling supplies;

WHEREAS, on April 14th, 2009, the Metropolitan Water District of Southern California (Metropolitan) declared that a regional water shortage exists and implemented its Water Supply Allocation Plan (WSAP) at a Regional Shortage Level 2, effective July 1st , 2009, including penalty rates for water use in excess of a member agency's annual allocation; and

WHEREAS, Ordinance No. 12 authorizes the Board of Directors to pass through to member agencies of the District any allocations or penalties for use exceeding allocations the Metropolitan Water District of Southern California may impose or that the Board of Directors might independently judge to be necessary.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF CALLEGUAS MUNICIPAL WATER DISTRICT RESOLVES AS FOLLOWS:

1. The General Manager is directed to develop and apply supply allocations for each District purveyor consistent with Metropolitan's WSAP; and

2. While the WSAP is in effect, the General Manager shall monitor implementation of WSAP requirements and provide monthly reports to the Board which compare actual purveyor demand with monthly allocation targets.

ADOPTED, SIGNED AND APPROVED this 27th day of May, 2009.

Ted Grandsen, President
Board of Directors

ATTEST:

Donald G. Hauser, Secretary
Board of Directors

Metropolitan Allocation (Level 2 - Initial)
Camrosa Water District - Revised 6/17/09

	Acre feet
Base Period Retail Demand	***12,637***
Base Period Local Supply (CY 2004- 2006 avg.)	3,763
Base Period MWD Firm (CY 2004 - 2006 avg.)	8,874
Allocation Year Retail Demand	***12,978***
Base Period Retail Demand	12,637
2007 - 2009 VC County Growth Adjustment	2.70%
Allocation Year Total Local Supply	***3,863***
Base Period Local Supply	3,763
Planned Increase Local Supply	100
Extraordinary Increase Local Supply	-
Allocation Year Local Supply for WSAP Calculation	***3,863***
Base Period Local Supply	3,763
Planned Increase Local Supply	100
Shared Extraordinary Increase Local Supply	-
Allocation Year Demand on MWD	***9,115***
Allocation Year Retail Demand	12,978
Allocation Year Local Supply for WSAP Calculation	3,863
Dependence on MWD	***70.23%***
Allocation Year Retail Demand	12,978
Allocation Year Demand on MWD	9,115
Wholesale Minimum Allocation	***7,748***
Allocation Year Demand on MWD	9,115
Wholesale Minimum Percentage	85.00%
Conservation Hardening Credit	***67***
Qualifying Rate Structure (acre feet)	67
MWD Allocation	***7,815***
Wholesale Minimum Allocation	7,748
Conservation Hardening Credit	67

Total Water Supply	***11,678***
Base Period Local Supply	3,763
Planned Increase Local Supply	100
Extraordinary Increase Local Supply	-
MWD Allocation	7,815
Retail Shortage	***10.02%***
Allocation Year Retail Demand	12,978
Total Water Supply	11,678
Wholesale Shortage	***14.26%***
Allocation Year Demand on MWD	9,115
MWD Allocation	7,815

Penalty if MWD Allocation exceeded	
If 10% over Allocation	$1,267,580
If no reduction from Allocation Year Demand	$2,316,738
Metropolitan Penalty ***(based on recent Met rate increase) :***	
Use between 100% and 115% of allocation = $1,622/af (2 x Tier 2)	
Use greater than 115% of allocation = $3,244/af (4 x Tier 2)	

web site: www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800 805/526-9323 • FAX: 805/522-5730 • FAX: 805/526-3675

Memorandum

To: Purveyor Managers

From: Eric Bergh, Acting General manager

Date: September 2, 2010

Re: 2010-2011 Allocation Notice

As you are aware, Metropolitan's Water Supply Allocation Plan (WSAP) became effective July 1, 2009. Persistent uncertainties about water supplies led Metropolitan's Board to extend Level 2 allocations through June 30, 2011. As a result, Calleguas will also extend supply allocations for each District purveyor through June 2011 consistent with Metropolitan's WSAP.

In August, Metropolitan's Board of Directors approved revisions to the formula used to calculate member agency allocations. On the whole, Calleguas benefited from these revisions by receiving a slightly higher allocation. Calleguas has developed allocations for Allocation Year 2011 for its member purveyors that mirror Metropolitan's formula. Your agency's initial allocation is attached. It is important to note that these allocations are not necessarily fixed, as actual local supply production during the allocation year will likely lead to adjustments.

Throughout the Allocation Year, Calleguas will continue to include a chart of monthly targets vs. actual deliveries in water billings. To assist in that process, please continue to report your agency's groundwater production to Calleguas promptly at the end of each month. The monthly target reports will continue to serve as a monitoring tool designed to help purveyors avoid deliveries at levels that might result in the assessment of penalties by Metropolitan.

Again, Metropolitan will impose applicable penalties only after a reconciliation process at the end of the Allocation Year, when all local production for the year is certified. A penalty of double Metropolitan's Tier 2 rate, in effect at the time, will be applied to deliveries up to 15 percent above an agency's final allocation. A penalty of quadruple the Tier 2 rate will be assessed on deliveries greater than 15 percent above an allocation. Calleguas will not assess an additional penalty and will only pass through Metropolitan's penalty to the affected purveyor(s).

Our experience over the past year demonstrated that a reduction of 15 percent is achievable. We are optimistic that we will realize similar results this year. As always, feel free to contact either Cy Johnson at 805-579-7129 or me at 805-579-7128 if you have any questions on this matter.

RESOLUTION NO. 1679

RESOLUTION OF THE BOARD OF DIRECTORS
OF CALLEGUAS MUNICIPAL WATER DISTRICT
CONTINUING A WATER SUPPLY ALLOCATION
PROGRAM FOR FISCAL YEAR 2010/2011

WHEREAS, the Board of Directors Calleguas Municipal Water District (District) adopted an Urban Water Management Plan (the Plan) in 1995 in accordance with the requirements of the California Urban Water Management Planning Act (Water Code Sections 10610 et seq; the Act); and the plan was updated in accordance with applicable law and adopted by the Board in 2000; and further updated and adopted on October 5th, 2005;

WHEREAS, the Plan describes actions the District may follow to manage demand and, if necessary, allocate water in response to reductions in available water supplies;

WHEREAS, Biological Opinions issued to protect Delta smelt, Central Valley salmon, longfin smelt and other species have reduced water supplies available for delivery from the State Water Project;

WHEREAS, on May 27th, 2009, under Resolution No. 1636, the District approved implementation of a water supply allocation program, effective July 1st, 2009, consistent with Metropolitan's previously-adopted Water Supply Allocation Plan (WSAP);

WHEREAS, on April 13th, 2010, Metropolitan declared that a regional water shortage will continue into 2011 and implemented its Water Supply Allocation Plan (WSAP) at a Regional Shortage Level 2, effective July 1st , 2010, including penalty rates for water use in excess of a member agency's annual allocation;

WHEREAS, the Department of Water Resources' current allocation of State Water Project water available to Metropolitan and the other state water contractors is only 50 percent of contracted supply as of the date of this resolution; and

WHEREAS, Ordinance No. 12 authorizes the Board of Directors to pass through to member agencies of the District any allocations or penalties for use exceeding allocations the Metropolitan Water District of Southern California may impose or that the Board of Directors might independently judge to be necessary.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF CALLEGUAS MUNICIPAL WATER DISTRICT RESOLVES AS FOLLOWS:

1. The General Manager is directed to develop and apply supply allocations for Fiscal Year 2010/ 2011 for each District purveyor consistent with Metropolitan's WSAP; and

2. While the WSAP is in effect, the General Manager shall monitor implementation of WSAP requirements and provide monthly reports to the Board which compare actual purveyor demand with monthly allocation targets.

ADOPTED, SIGNED AND APPROVED this 7th day of July, 2010.

Ted Grandsen, President
Board of Directors

ATTEST:

Donald G. Hauser, Secretary
Board of Directors

Calleguas Municipal Water District

Purveyor Allocation Sheet - 2010/11 WSAP

Purveyor: Camrosa Water District

9/1/2010

	New WSAP Model
RETAIL M&I DEMANDS	
Base Period Retail Demands (Plus IAWP Opt Out)	12,637
2007 Growth (DOF Actual)	0.82%
2008 Growth (DOF Actual)	0.98%
2009 Growth (DOF Acutal)	1.13%
2010 Growth (2007-2009 Average)	0.98%
Allocation Year Retail Demands	**13,139**
LOCAL SUPPLIES	
Planned Allocation Year Local Supplies[1]	3,056
Extraordinary Allocation Year Local Supplies	-
Allocation Year Local Supplies	**3,056**
WHOLESALE MIMIMUM ALLOCATION	
Demand for Firm MWD Supplies (a)	10,083
Wholesale Minimum Percentage (b)	85.0%
Wholesale Minimum Allocation (a x b)	**8,570**
RETAIL IMPACT ADJUSTMENT ALLOCATION	
Retail Impact Adjustment Maximum (c)	5.0%
Dependence on MWD (d)	77%
Retail Impact Adjustment Allocation (a x c x d)	**387**
DEMAND HARDENING CREDIT	
Demand Hardening Adjustment[2]	**61**
TOTAL MWD ALLOCATION	**9,018**

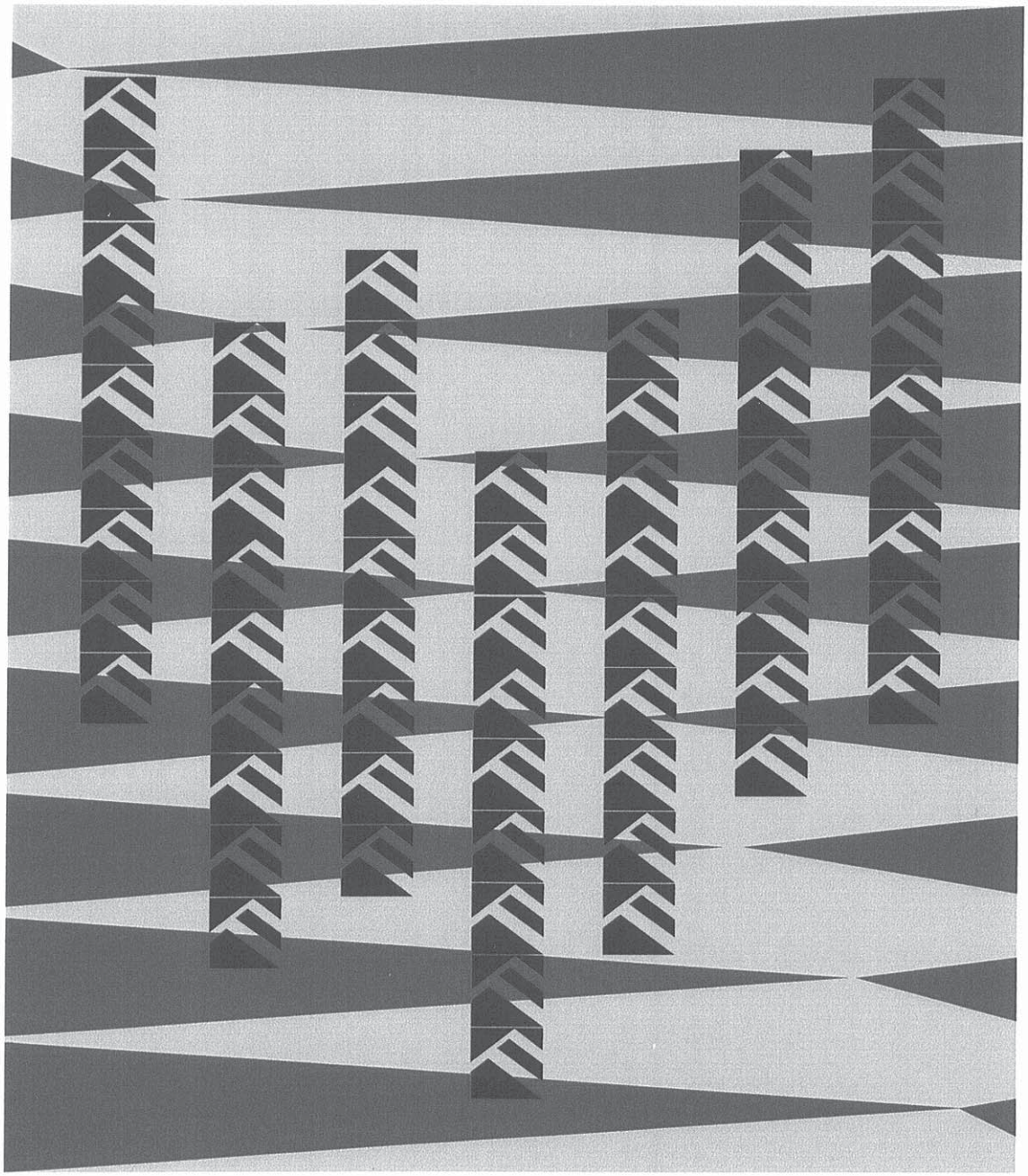
[1]Using Purveyor forecast of groundwater pumping in Fiscal Year 2010-2011.

[2]CMWD Demand Hardening Credit allocated among its member purveyors according to Base Year Average Demand on CMWD

APPENDIX F. Santa Rosa Groundwater Management Plan

- The full length hardcopy of the SRGWMP has been left out of this Board of Directors' copy, for brevity's sake. The entire document is available upon request.

Santa Rosa Basin Groundwater Management Plan



Camrosa Water District ◆ Santa Rosa Mutual Water Company ◆ Property Owners

April 24, 1997

Santa Rosa Basin
Groundwater Management Plan

For Areas Within the Arroyo Santa Rosa Portion of the Santa Rosa Groundwater Basin Not Within the Boundaries of the Fox Canyon Groundwater Management Agency

Including, as an appendix, *Santa Rosa Groundwater Basin Management Plan Update, Final Report,* April 24, 1997, Boyle Engineering Corporation

Camrosa Water District
Santa Rosa Mutual Water Company
Property Owners

April 24, 1997
Second Edition

7385 Santa Rosa Road ◆ Camarillo, California 93012

Contents

I. GENERAL BACKGROUND

INTRODUCTION

The Santa Rosa Basin Groundwater Management Plan (Plan) is a cooperative effort among the Camrosa Water District, the Santa Rosa Mutual Water Company, and property owners with groundwater rights overlying the basin. The Plan Council was formally formed in August of 1996 by the signatories to the Memorandum of Understanding Regarding Groundwater Basin Management in the Arroyo Santa Rosa Groundwater Basin (MOU) for the purpose of developing this Plan. The Council has met regularly throughout the development of the Plan and the efforts of many of the signatories to the MOU are reflected in the contents.

The Plan uses the authority of the Groundwater Management Act of the California Water Code (Section 10750, et seq.), enacted in 1992 as Assembly Bill 3030. The Camrosa Water District has the authority to adopt and implement this Plan under the guidelines specified in the California Water Code. Camrosa, however, desires the cooperation of all of the parties to the MOU in the implementation and administration of the Plan.

INTENT

It is the intent of all of the parties to the Santa Rosa Groundwater Management Plan to optimize the beneficial uses of the groundwater basin, preserve and enhance water quality, and assure preservation of the resource for future generations. All efforts towards our goal shall be incremental. Each incremental action shall be measured and the results evaluated prior to further action. No action shall be taken which is detrimental to neighboring water bodies, the environment, or individual pumpers without agreed mitigating measures.

It is not the intent of the Plan to form a Groundwater Management Agency or to infringe on the property rights of individual landowners overlying the Santa Rosa Basin. Implementation of the Plan or any aspects of the Plan, which impact private property, shall be accomplished through a combination of education and cooperation rather than regulation and coercion. It is not the intention of the Plan to direct land use policy, although the information generated by the Plan is available to those public agencies charged with land use planning. Camrosa and Santa Rosa Mutual shall share the financial responsibilities of Plan implementation based upon separate agreements.

THE BASIN

The Santa Rosa hydrologic sub-unit (State designation 4-7) covers an area of 12.5 square miles of which the overall groundwater basin occupies approximately 5.9 square miles. The surface drainage area is bounded on the north by the Las Posas Hills, on the south by the Conejo Hills, on the east by the Moncliff Ridge, and the west by the Pleasant Valley Summit. The basin within the Santa Rosa Valley is generally defined by structural and geologic conditions. The basin is bounded on the north by the Simi Fault, and on the south by the outcrop of the Conejo Volcanics. The western boundary is formed by

narrowing caused by a low, north trending ridge of volcanic rocks. The eastern boundary is located at the narrow valley of the Arroyo Santa Rosa; the Tierra Rejada hydrologic sub-unit lies to the east of the divide. Two distinct regions of the basin exist on either side of the Bailey Fault, which hydrogeologically divides the western third of the basin from the eastern two-thirds.

Though the Santa Rosa Groundwater Basin encompasses almost the entire underlying substructures of the Santa Rosa Valley, the areas west of the Bailey Fault can be considered to be hydrogeologically separate from the area east of the fault. The formations to the west of the Bailey Fault have much more in common geologically with the formations lying to the west than they do with the formations to the east.[1] The western third of the basin consists of a combination of formations found in the Fox Canyon/San Pedro geologic regions of the County. Thus, the Fox Canyon Groundwater Management Agency (GMA) has assumed management of the operation of the part of the Santa Rosa Basin lying west of the Bailey Fault. This document is the Plan for management of the operation of the remainder of the basin, identified throughout the Plan as the Arroyo Santa Rosa Groundwater Basin.

[1] "Geology and Groundwater Supply of Camrosa County Water District"; Thomas L. Bailey, March, 1969

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II. THE SANTA ROSA GROUNDWATER BASIN

DESCRIPTION

The Santa Rosa Groundwater Basin is a broad, elliptical, and flat-bottomed valley. The dominant structural element of the basin is the Santa Rosa Syncline, a downward trending fold lying east to west and extending from the east end of Tierra Rejada Valley westward into Pleasant Valley. Several major faults occur in the Santa Rosa Basin, the largest of which is the Simi Fault Zone. This zone of faulting has resulted in displacement of the geologic strata of 500 to 5,000 feet along the northern edge of the basin. The other major fault, the Bailey Fault, runs northeast to southwest near the western end of the basin, and separates the northwestern third of the basin from the rest of the basin. The Bailey Fault is a geologic and political boundary within the basin.

Groundwater in the Santa Rosa Basin is extracted from sediments of Holocene, Pleistocene, Upper Pleistocene, and Miocene age. There are four major water-bearing zones within the basin; conglomerate beds within the Conejo Volcanics, conglomerate and sandstone within the Santa Margarita Formation, sand and gravel in the Saugus Formation, and alluvium. Structurally, the Conejo Volcanics underlie the basin and form the base on which the other formations lie. The Santa Margarita Formation is peculiar to the area of the basin lying east of the Bailey Fault and lies atop the Conejo Volcanics. Over the Santa Margarita Formation lies a confining layer and over that, the alluvium. The area west of the Bailey Fault consists primarily of the Saugus Formation, a combination of Fox Canyon and San Pedro Formations. The Saugus Formation evident within the Santa Rosa Basin is the result of an outcropping of the larger Fox Canyon and San Pedro Formations west of the valley. This outcropping pinches off at the western end of the valley and then fans out into the valley, stopping at the Bailey Fault barrier. Due to the pinching off of the Saugus Formation, the Santa Rosa Groundwater Basin is considered to be a confined basin, separate from the larger western water bearing zones.[2]

Although there are few wells which penetrate into the Conejo Volcanics, of special interest to this Plan are the alluvium, Santa Margarita and Saugus Formations from which the majority of groundwater pumping occurs. It is also important to recognize the effects of the Bailey Fault, both hydrogeologically and politically, on groundwater production within the Basin.

Saugus Formation

The thickness of the Saugus Formation ranges from approximately 300 to 900 feet. Wells perforated into the Saugus Formation have specific capacities (well yield per foot of drawdown) ranging from 2.3 gallons per minute per foot (gpm/ft) to 100 gpm/ft. Water in the Saugus Formation occurs under leaky artesian conditions.

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[2] "Santa Rosa Groundwater Basin Management Plan, Final Draft"; Boyle Engineering, June 1987. Also, "Geology and Groundwater Supply of Camrosa County Water District"; Thomas L. Bailey, March, 1969

Santa Margarita Formation
East of the Bailey Fault and underlying the older alluvium aquifer is the Santa Margarita Aquifer. The thickness of this aquifer is 700 feet in the center of the Basin and pinches out against the Conejo Volcanics to the south. Specific capacities of wells perforated into this formation range from 3 gpm/ft. to 75 gpm/ft.

Alluvium
The alluvium layer on the east side of the Bailey Fault is old alluvium of Pleistocene age. This unit ranges in thickness from 300 to 600 feet. A pump efficiency test performed in the mid-1980's on Santa Rosa Mutual Well #10 (2N/20Q3) indicates a specific capacity of 19 gpm/ft.

Bailey Fault Zone
The Bailey Fault runs northeast and southwest through the Santa Rosa Valley, separating the primary Saugus Formation from the Santa Margarita Formation. A thinner layer of Saugus Formation exists east of the Bailey Fault, above the Santa Margarita Formation. However, the Saugus Formations on either side of the Bailey Fault are hydrogeologically separated. There is a particularly noticeable difference in water levels across the Bailey Fault. Water levels east of the fault are 60 to 80 feet higher than the western portion, indicating a poor transmittability of water across the fault.[3]

Inferred Semi-Permeable Boundary
In February 1997, Boyle Engineering issued a report which describes modeling efforts to determine yield of the overall Basin. The report identifies a zone of low permeability which is inferred to be either fault-related, similar to conditions associated with the Bailey Fault, or stratigraphic in origin (low permeability sediments). The zone was identified when rising water levels observed in several wells in the eastern most areas of the Basin did not correspond with stable water levels observed in the western area.

YIELD

The yield, or safe yield, of the Santa Rosa Groundwater Basin, including areas east and west of the Bailey Fault, is approximately 4,200 AFY. Prior to 1964, water levels in the Santa Rosa Basin had been rapidly declining under an average annual extraction of approximately 3,500 AF. This extraction rate was believed to be overdrafting the basin by about 600 AFY. With the initiation of discharge of treated wastewater to Arroyo Conejo in 1964, water levels within the basin began to recover. Recovery to pre-overdraft conditions was established by 1970 and water levels have remained relatively stable since that time. Storage capacity of the entire basin, both east and west of the Bailey Fault, is estimated to be 170,000 AF.[4]

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[3] "Santa Rosa Groundwater Basin Management Plan, Final Draft"; Boyle Engineering, June, 1987
[4] "Santa Rosa Groundwater Basin Management Plan Update"; Boyle Engineering, January, 1997

QUALITY

Water quality degradation in the Santa Rosa Groundwater Basin continues to be a significant concern. Since 1987, general mineral concentrations have increased slightly at some wells, while nitrate-nitrogen ion concentrations continue to be reported at levels exceeding State standards for potable water quality.

Historically, nitrate concentrations (NO3-N) occasionally exceed State standards for certain wells within the basin. Speculation attributes these localized occurrences of elevated concentrations of nitrate to percolation of residues of nitrogen-based fertilizers, wells with inadequate sanitary seals, excessive application of fertilizers, effluent from septic tanks, and effluent from the Thousand Oaks Hill Canyon Treatment Plant.

Total dissolved solids (TDS) concentrations have remained fairly consistent since the mid-1980's. In general, TDS concentrations have ranged between 600 and 1,000 PPM.

Recently, chloride sampling has become part of an annual water quality review by Camrosa. Chloride concentrations in the samples collected in July 1992 were found to range from 128 PPM to 184 PPM. Based on available data, chloride concentration levels range from 117 PPM to 140 PPM in the geographical center of the basin.

HISTORICAL USE

The groundwater levels of the Santa Rosa Groundwater Basin experienced a steady decline averaging five feet per year from the early 1950's to the early 1960's. The decline was due to heavy pumping by agricultural concerns and low rainfall during the period. When discharges from Hill Canyon Treatment Plant into the Conejo Creek began in the early 1960's, water levels in the basin began rising rapidly. The average water level rise in the Saugus Formation has been 2 to 3 feet per year, primarily attributed to the percolation and recharge of treatment plant effluent. The water level rise in the Santa Margarita Formation has been more dramatic with a range of rise between 5 and 10 feet per year. The central portion of the basin, east of the Bailey Fault has received the greatest benefit of effluent percolation and recharge. Increased rainfall between 1964 and 1980 also contributed to water level rise.

The Santa Rosa Basin has historically been devoted to agricultural pumping. Principal crops in the area are citrus and avocados. Residential land use has increased since the 1960's, however, density is low. No sewage collection system has been planned or designed for the area east of the City of Camarillo boundaries. Septic systems are used throughout the Santa Rosa Valley.

Development of groundwater resources in the Santa Rosa Basin began in the early 1900's. Over 100 test holes and wells have been drilled throughout the basin and approximately 60 were completed as water wells. As many as 30 wells are still active. There are three

major producers of groundwater in the Santa Rosa Basin: individual well operators, Camrosa Water District, and Santa Rosa Mutual Water Company. Santa Rosa Mutual supplies potable domestic and agricultural water from 4 wells. The Santa Rosa Mutual wells are located in the central portion of the basin, perforated into the alluvium or Santa Margarita aquifer layers. Camrosa presently operates 4 wells in the central portion of the basin, perforated into both the alluvium and Santa Margarita layers. Private pumping is located throughout the basin.

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III. ORGANIZATIONAL STRUCTURE

THE COUNCIL

The Santa Rosa Groundwater Management Council (Council) is comprised of three primary groups with interest in the Santa Rosa Basin and are signatories to the MOU. These groups are: the Santa Rosa Mutual Water Company; the Camrosa Water District; and the owners of private and public properties with the associated water rights, directly overlying the groundwater basin subject to the Plan or their assignees.

Santa Rosa Mutual Water Company (SRMWC)

The Santa Rosa Mutual Water Company (SRMWC) is an investor-owned mutual water company. SRMWC sole source of water is the Santa Rosa Basin. The SRMWC provides both domestic and agricultural water service to its shareholders. SRMWC is managed by a board of directors elected by the shareholders. Two SRMWC Board Members sit on the "Council."

Camrosa Water District (Camrosa)

Camrosa Water District (Camrosa) is a publicly-owned water utility formed under the authority of the County Water District Section of the California Water Code. Camrosa produces water from the Santa Rosa Basin; as well as, the Tierra Rejada and Pleasant Valley Basins; and purchases imported water from Calleguas Municipal Water District. Camrosa provides domestic and agricultural water service throughout the Santa Rosa - Valley, the Tierra Rejada Valley, and the eastern portion of the City of Camarillo. Camrosa is managed by a five member Board of Directors elected at large by the District's residents. Two Camrosa Board Members sit on the "Council".

Property Owners

The owners of private or public property with the associated water rights directly overlying the groundwater basin subject to the Plan or their assignees operate individually owned wells throughout the basin. The Property Owners include large agricultural operations, small farms, and idle lands. Some Property Owners have wells which are inactive, some produce only a portion of the water they require and receive the balance from Camrosa or from the Conejo Creek. There are others who depend completely on Santa Rosa Basin water. Each Property Owner who has signed the MOU sits on the Council. Any property owner with associated water rights overlying the Basin may, at any time, join the council by signing the MOU.

MEETING SCHEDULE AND DETERMINATION OF QUORUM

Regular Council meetings shall be scheduled a minimum of once each year. A quorum of the Council shall be one member from SRMWC, one member from Camrosa, and Property Owners representing greater than 50% of the combined irrigatable acreage of the Council Member Property Owners.

Brown Act
The Council shall conduct meetings and take all actions in compliance with the Brown Act (California Government Code 54953) of the State of California.

VOTING PROCEDURES

Qualifying Property
Qualifying Property shall mean the portions of parcels of land, which physically overlie the Santa Rosa Groundwater Basin and retain the associated overlying groundwater rights. An initial determination of the parcels or portions of parcels included within the basin shall be made by reviewing existing parcel maps and basin descriptions. Voting of the Property Owners shall be apportioned based upon the number of irrigatable acres within the Qualifying Property.

The official apportionment shall be approved by the full Council and remain in force until amended by the Council. The apportionment shall be reviewed no less than every two years by the Executive Committee. Upon the recommendation of the Executive Committee a re-apportionment shall be reviewed and approved by the full Council. The current apportionment shall be approved at the first Council Meeting.

Vote of the Council
Each of the three interest groups on the Council shall have one vote on issues before the body. SRMWC shall have one vote, Camrosa shall have one vote, and the Property Owners shall collectively have one vote.

Immediately following the opening of each Council meeting SRMWC and Camrosa Council members will declare the Council member authorized to cast the organizations' vote. That member and only that member will be recognized to vote for the organization throughout the meeting.

The Property Owners shall also declare one member of the Property Owner's Executive Committee representatives to be recognized to vote for the group. However, prior to each vote any Property Owner sitting on the Council may request a roll call of the Property Owners. Following the roll call, the vote of the Property Owners shall be cast to reflect the choice of more than 50% of the combined irrigatable acreage of the Property Owners on the Council.

All actions of the Council shall require three affirmative votes.

Absentee Voting Procedures
Prior to each Annual Council Meeting an agenda and an agenda packet shall be distributed to each Council Member. The Property Owners Packets shall also include a

ballot listing each action item. The Property Owner may submit the ballot to the Chairman prior to the meeting. If a role call is ordered on any item, the Property Owners' absentee Ballots for that item will be counted. If no ballot is submitted and the Property Owner is not present, the vote shall be counted as an affirmative for that item.

Assignments
Property Owners may assign their apportioned vote to any person authorized to act in their behalf. This person may be an agent of the Property Owner or another member of the Council who is also a property Owner. Assignments must be made in writing on a form provided by the Council and submitted to the Council Chairperson prior to Council meetings. The Chair shall announce prior to consideration of action items any assignment of voting authority.

OFFICERS OF THE COUNCIL

Chair and Vice Chair
The Executive Committee shall select a Chairperson and a Vice-Chairperson for terms of two years each. The Chairperson shall preside over both the Executive Committee meetings and the Council meetings. The Vice-Chairperson shall act as Chairperson in his/her absence.

Executive Committee
The Executive Committee of the Council shall be two representatives of SRMWC, two representatives of Camrosa, and two representatives of the Property Owners. The representatives of the Property Owners shall be selected by the Property Owners at each annual Council meeting.

The Executive Committee shall meet regularly four times per year, and Special Meetings may be scheduled as necessary.

IV. GOALS AND CONSTRAINTS OF THE PLAN

GENERAL CONSTRAINTS

The Santa Rosa Basin Groundwater Management Plan shall have some generally accepted (and Council approved) limitations and constraints. In general, elements of the plan which call for any change in the status quo shall not be implemented except in an incremental fashion, accompanied by regular monitoring and reporting of potential impacts. Current evidence does not show a state of the basin, such as overdraft, which would necessitate immediate action to rectify.

The elements of the Plan shall not adversely impact the environment and shall not violate Federal or State regulations. An Environmental Impact Report or Impact Statement, where required, shall be completed for each element of the plan as it is implemented.

Elements of the Plan shall not result in overdrafting of the basin. Elements of the Plan shall not adversely impact neighboring water bodies or individual pumpers.

MAXIMIZATION OF BENEFICIAL USE

The Santa Rosa Basin, including both portions lying east and west of the Bailey Fault, has an estimated storage capacity of 170,000[5] acre feet of water. The usable storage is some fraction of this amount. If overdrafted the storage capacity may be permanently lost to ground subsidence, high concentrations of salts or other dissolved solids. The total usable storage is a function of the limitations on total drawdown of the basin and the rate of recovery.

We do know that in the late 1950's and early 1960's that the basin was drawn down to historical lows. We also know that the basin recovered very rapidly resulting from a combination of rainfall, start-up of the Hill Canyon Wastewater Treatment Plant, and importation of State Project Water to both the Conejo and the Santa Rosa Valleys.

When groundwater was the only source of water to the area it was critical that adequate usable storage was maintained to meet the water demands of all users throughout the most critical dry periods. With the importation of State Project Water and reclamation of wastewater the opportunity to conjunctively use these various water resources to the optimization of each could result in additional yield from the Santa Rosa Basin. Systematic draw down of the basin to take full advantage of above average rainfall years and recharge from Hill Canyon may result in additional water yield with minimal impacts to those depending on the water resource. A variety of options such as off-season storage, in-lieu of use, and water exchanges could facilitate better management of the basin's storage.

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[5] "Santa Rosa Groundwater Basin Management Plan Update"; Boyle Engineering, January, 1997

Goal: Maximize Beneficial Water Use

Increasing demands are being made on the basin for local urban use. Both Camrosa Water District and Santa Rosa Mutual depend on basin supplies for delivery of domestic water. The basin is also a valuable source of irrigation water for overlying pumpers. In addition, some overlying individual pumpers use basin water for domestic use on their parcels.

There is a need for conjunctive management of groundwater, imported water, and local surface flows in the basin to maximize the use of available sources of supply. In 1992, Camrosa issued a Staff Report on the Demands and Supplies of the District. The Supply and Demand Study indicated that a potential demand of approximately 7,500 acre feet per year existed over the total basin, including that area within the GMA and the predominately domestic use in the eastern end of the basin. Local sources of supply may exist to meet this demand, however water quality issues impact use of some local supplies for domestic purposes.

Goal: Maximize Beneficial Storage Capabilities

Conjunctive use of the various water supplies may enable basin users to increase the total yield by better management of the Basin's storage and recharge capabilities.

Goal: Maximize Replenishment Opportunities

Enhanced recharge may also produce additional yield from the basin. Areas in Hill Canyon and in the eastern portion of the Valley could be developed to increase the amount of the recharge to the basin.

MANAGE WATER QUALITY

Degradation of the basin's water quality has been on going since the development of agriculture in the early 1900's. Although relatively high chlorides and other typical dissolved solids occur naturally in the area, chlorides, and particularly nitrates have grown in concentration through large scale irrigation of farmland, use of fertilizers, livestock operations, discharges from Hill Canyon Wastewater Treatment Plant, and more recently septic systems from urbanization of the eastern valley. Some pesticide contamination has also been found in wells near the Arroyo Santa Rosa.

The most notable contaminate is nitrate. Concentrations exceed the safe Drinking Water Levels in a majority of the large production wells in the Valley. The levels have been increasing since the early 1980's and threaten to make the water unusable for domestic purposes.

Currently adequate imported water is available with very low nitrates to blend with groundwater both reducing the nitrates to an acceptable level and also reducing TDS and general hardness.

Modern agricultural practices do not present the same threat to water quality, as did the past. The key to improving quality will be to identify the mineral load (chlorides, nitrates, etc.) to the basin take action in the form of education to reduce the loading and extract at least as much or more than is being applied each year.

Goal: Prevent Future Degradation
Prevention of future degradation will require determining the present sources of potential degradation. Annual loading of minerals into basin soils will be quantified. Sources of basin recharge and the quality of the recharge water will be analyzed. Conjunctive use of all sources of supply, addressed within the Plan's goal of maximization of beneficial use, may provide the ability to control degradation of the basin by supplementing higher quality recharge water. Alternatives will be developed to maximize recharge from the highest quality sources.

Annual loading of non-point source pollution, such as pesticides, oils, street runoff, and livestock by-products impact the basin to an unknown degree. The Plan will address quantification of these impacts and development of educational programs or community out-reach programs to involve the community in environmentally sound disposal of potential pollutants.

Goal: Improve Water Quality
Improvement of overall quality will require the same approach as prevention of further contamination except on a much more intense scale. Reducing annual loading and increasing extraction of minerals and nutrients beyond annual loading levels may over time improve water quality. However, this process will not be accomplished quickly but would over decades provide future generation with a better quality local supply.

MAINTAIN LOCAL OVERSIGHT OF BASIN MANAGEMENT

Various local, state, and federal regulatory agencies exist which have mandates to insure the health and safety of local groundwater users. Implementation of these mandates takes the form of state or local laws, or formation of agencies which review and approve projects or land use.

Goal: Cooperate with Other Agencies to Insure Protection of the Basin
The Plan will provide an opportunity for Plan participants to inform themselves of the positions and requirements of regulatory agencies regarding use and protection of local groundwater. The Plan will provide participants interface to regulatory agencies through the review and comment process of those agencies. Agencies will be provided with a single contact point for communication with local groundwater users.

Goal: Provide a Source Document of Groundwater Quantity and Quality
The Plan will provide a single, verifiable data source for review by those individuals and agencies requiring data for formulation of regulatory policies or land use planning. It is the intent of the Plan to provide an on-going data collection program that can be used to define the Basin.

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V. ELEMENTS OF THE PLAN

A. BASIN YIELD
B. BASIN QUALITY

A. BASIN YIELD

BACKGROUND

In 1969, Camrosa Water District retained Thomas L. Bailey, Geologist, to produce a report entitled Geology and Groundwater Supply of Camrosa County Water District. The Bailey report included a statement of safe yield for the entire Basin as envisioned by Bailey. Bailey discussed the historical safe yield, drought conditions, and the impacts of the Hill Canyon Wastewater Plant discharge into Conejo Creek. Bailey indicated that effluent discharge increases the safe yield of the Basin by approximately 500 acre feet, but decreases the expected long-term water quality. After Bailey's report and until 1986, little analytical work was performed regarding Basin yield or quality.

Since 1986, two documents have been produced which describe the basin and implementation of a groundwater management plan. In 1988, Boyle Engineering Corp. prepared for the City of Thousand Oaks and Camrosa Water District the Report on Santa Rosa Groundwater Basin Management Plan. In 1997, Boyle Engineering Corp. will finalize a report on a computer generated model (ModFlow) describing the basin from the period 1989 to 1995. The intent of the first document was to develop a plan to manage the resources of the total Basin. The intent of the second document is to better describe the unmanaged portion of the total Basin and determine an operational plan for that area.

The 1988 document included a groundwater flow model developed for the report (Finite Element Groundwater Model Version 14, Johnson and Yoon, 1987). The model developed for the 1997 study is designed to replace the previous model, and employs the U.S. Geological Survey's finite difference code known as ModFlow (McDonald and Harbaugh, 1988). ModFlow has become a generally accepted modeling tool which can be modified using several non-proprietary core "packages" to solve the basic groundwater flow equations.

FINDINGS

The various studies conducted over the years have resulted in some generally accepted findings regarding the storage characteristics of the Santa Rosa Basin. The total volume of the basin, subdivisions of the Basin, sources of recharge, the relationship of other basins and average annual extraction from the basin have been developed, analyzed and refined to the point that a working module is able to project the result of various management strategies with reasonable accuracy.

Subdivisions of the Basin

The 1997 Boyle study reconfirms the presents of some geologic barrier, generally understood to be the Bailey Fault, which separates the western portion or lower Basin from the eastern portion Upper Basin. This barrier creates a hydraulic differential of approximately 60 feet and, although it allows some degree of leakage, is relatively

impervious. This physical boundary is paralleled closely by the political boundary of the Fox Canyon GMA.

The 1997 study also indicates the existence of a second geological barrier running north and south across the basin (see Exhibit A). This semi-permeable barrier creates a third cell in the basin by dividing the eastern basin into the middle and upper Santa Rosa sub-basins.

Storage Capacity

The total basin storage capacity is estimated to be 115,000 acre feet of water. The storage capacity of each of the sub-basins are estimated as follows:

Lower (AFY)	Middle (AFY)	Upper (AFY)
60,500	26,900	27,500

It is understood these storage amounts are estimates and are intended to be representative of the proportional distribution of storage capacity. The volume of stored water available for use from each sub-unit is estimated at less than half the actual storage capacity.

Basin Recharge

The basin has several sources of water, which provide recharge. These sources have been evaluated by each study. The findings of the most resent 1997 Boyle Report and corresponding boundary conditions used in the ModFlow model are deliberately conservative. A conscious effort was taken to avoid over estimation of the amount of water available for recharge.

Base Case[6]

	Lower (AF)	Middle (AF)	Upper (AF)
Sub-surface Inflow	13	511	326
Recharge (Rain + Applied)	1,019	644	507
River Leakage	23	1,118	0
Inflow from Adj. Sub-Basin	387	405	6
Total	1,442	2,678	839

In addition to the above sources of recharge to the basin the most recent study has identified additional inflows from the Tierra Rejada Valley. These flows are surface flows which have been observed for the past 4 years in amounts estimated to contribute 1500 acre feet per year to the recharge of the Upper Basin. These flows are most likely

[6] "Santa Rosa Groundwater Basin Management Plan Update Preliminary Draft Report", Boyle Engineering, Jan. 1997

the result of the overflow of the Tierra Rejada basin during the most recent period of above average rainfall, 1993-1997.

Although this inflow can not be considered a firm and continuous supply to the basin there may be operating alternatives, which may take better advantage of this supply when it is available. The Base Case 1997 ModFlow model run does not include this inflow. However, inclusion of the inflow is required to simulate the observed rise in water levels in the Upper sub-basin during the model calibration period.

During wet cycles and the calibration period the total basin inflows have been observed to be as follows:

Future Baseline (Current Conditions, 1997)[7]

	Lower (AF)	Middle (AF)	Upper (AF)
Sub-surface Inflow	0	135	263
Recharge (Rain + Applied)	966	612	485
River Leakage	23	1,336	1,416
Inflow from Adj. Sub-Basin	604	1,296	0
Total	1,593	3,379	2,164

Basin Extractions and Losses

Losses: Basin losses or outflow to down gradient basins has been estimated for each sub-basin unit based upon basin conditions over the period 1989-1996. These outflows are as follows:

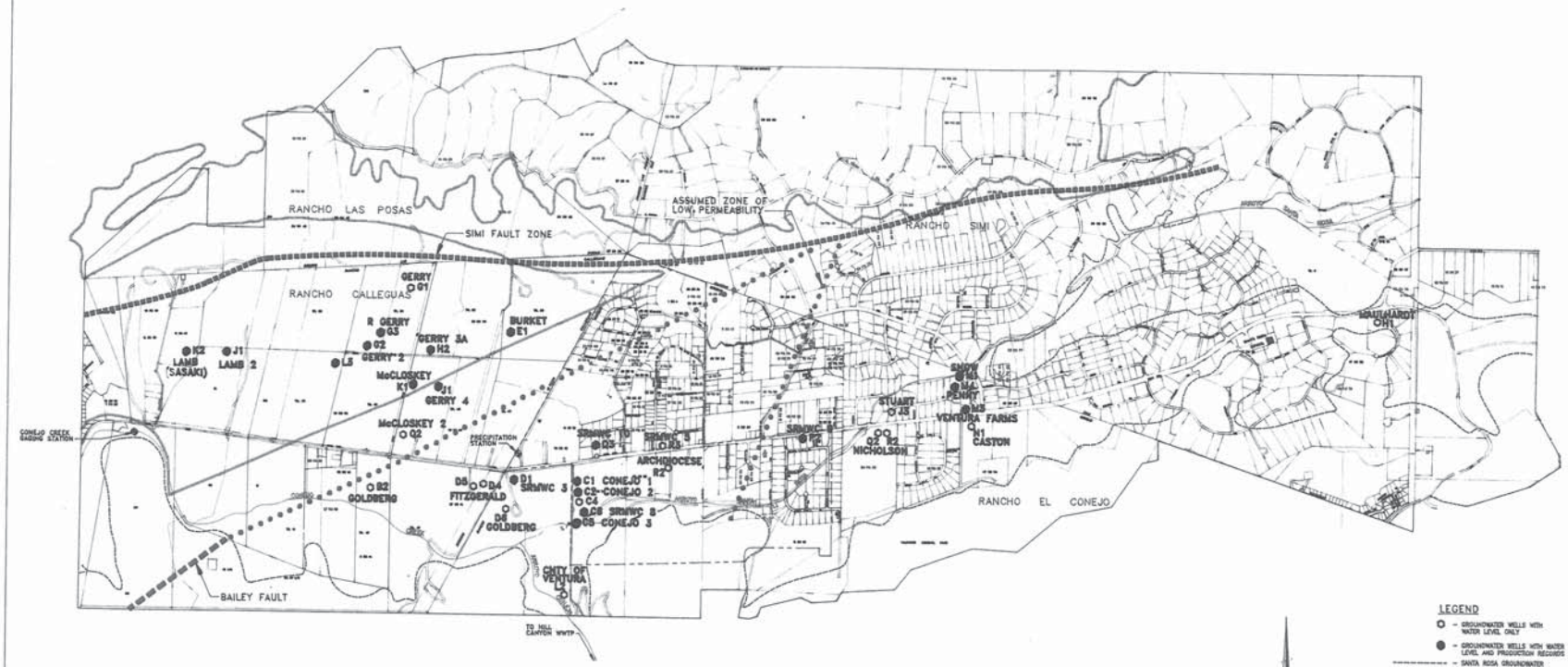
Lower (AF)	Middle (AF)	Upper (AF)
72	343	455

Outflow from the Middle sub-basin to the Lower sub-basin represents flow across the GMA Boundary. Outflow from the Lower sub-basin represents flow to the Pleasant Valley Basin. It must be noted that the 1987 Boyle Report did not specifically address flow across the GMA Boundary. The Report did, however, estimate a much greater amount of outflow to the Pleasant Valley Basin averaging 730 AF/yr.[8] This Plan does not dispute the earlier Report nor claim to quantify the exact flow across either boundary. The Plan's intent is only to recognize that some flow does occur.

Extractions: Annual basin extractions from all pumpers have varied throughout the past seven years from as low as 2,595 AFY to 3,550 AFY. The average extraction rate per sub-basin has varied when Camrosa and Santa Rosa Mutual have changed operations and

[7] "Santa Rosa Groundwater Basin Management Plan Update Draft Report", Boyle Engineering, Jan. 1997
[8] "Santa Rosa Groundwater Basin Management Plan Update Draft Report"

EXHIBIT A



CAMROSA WATER DISTRICT

SANTA ROSA GROUNDWATER BASIN BASE MAP

PLATE 1

concentrated pumping in different areas of the Basin. The average extraction rate was as follows from each portion of the basin:

Lower AFY	Middle AFY	Upper AFY
1,200	2,190	520

The most recent extraction rates and distribution of pumping by water user:

	Lower AFY	Middle AFY	Upper AFY
Camrosa	0	2,415	380
SRM	0	535	75
All Others	1,315	150	175
Total	1,315	3,100	630

Recent increased private pumping activity in the lower and upper sub-basins has been observed, but is not reflected in the seven year average.

Average Annual Yield of Sub-basins

The 1987 Boyle Study found the annual yield of the Basin to be approximately 4200 AF. The 1997 Modflow model (Base Case) confirms this result and further provides estimated yields for each of the three sub-basins. The following annual yields are based upon the base case model:

Lower AFY	Middle AFY	Upper AFY
1,380	2,335	385

BASIN OPERATIONAL POLICIES

Operational Philosophy

The Santa Rosa Groundwater basin water users prior to 1964 had no alternate sources of water. An overdraft of the basin similar to that which accrued in the 1950's threatened the livelihood of local farming operations, overall property values, and potentially the health and safety of the residents. Fortunately, today alternate water resources are available to the Santa Rosa Valley. Camrosa Water District provides imported water for all beneficial uses. Reclaimed water is available from the Hill Canyon Wastewater treatment plant for irrigation.

Imported State Project water from Callegues Municipal Water District is available to Camrosa for a variety of uses that can benefit the operation of the Basin. In addition to providing an uninterruptable supplemental domestic water supply, interruptable supplies

are available during years when surplus waters are available to the State Project. Water is available at a discounted rate for agricultural irrigation and water is also available at a reduced rate for seasonal storage. Seasonal storage water has been purchased by Camrosa and successfully injected into and recovered from the Santa Rosa Basin and the Pleasant Valley Basin.

Camrosa also has a purchase agreement with the City of Thousand Oaks and Calleguas for the water discharged from the Hill Canyon Treatment Plant over the next 25 years. These agreements will result in the eventual construction of the Conejo Creek Project and delivery of reclaim water throughout Camrosa service area, including the Santa Rosa Valley. The agreements also provide assurance that any recharge benefits the basin has received from the Conejo Creek will continue throughout the term of the contract.

Santa Rosa Mutual and Property Owners: Although alternate water supplies are ultimately available to everyone in the Santa Rosa Valley many residents and property owners are still solely reliant on groundwater. An overdraft of the ground water supplies would cause these water users economic hardships in both capital for new facilities and increased water costs.

Camrosa Water District: The Santa Rosa Basin is extremely important to the Camrosa Water district. Camrosa's ability to utilize this water resource in conjunction with imported water, and reclaimed water improves the overall reliability of the water supply to the Camrosa service area. The Santa Rosa Basin can provide reserve water supplies for emergencies, storage capacity in years when surplus imported waters are available, and an economical supplementary water source.

Regional Benefits: Beyond the needs of the Santa Rosa Valley and Camrosa, this water supply reduces the average annual demand on the Calleguas, Metropolitan Water District and the State Water Project, making more water available to Southern California. The surrounding communities served by Calleguas may benefit particularly in times of emergency when Camrosa can reduce its purchases of imported water so others relying solely on imported water have additional supplies.

Fox Canyon Groundwater Management Agency: The Santa Rosa Basin also plays a role in the overall water balance within Ventura County. The down gradient basins of the Fox Canyon GMA (including the Lower Santa Rosa sub-basin) receive some recharge benefits from the Santa Rosa Basin through sub-surface flow to the down gradient Pleasant Valley Basin. Routine overdrafting of the Santa Rosa basin could result in the loss of a water source to the Fox Canyon GMA basins already suffering from overdraft. The Lower (GMA) Santa Rosa sub-basin also benefits from the applied irrigation water to the extensive agricultural zone overlying the Lower sub-basin. The total demand for water in this area is estimated to be 3,000 AF annually, based on year-round crop production. Approximately 1,400 AFY are pumped from the Lower GMA sub-basin; the remainder of the demand is met by a combination of State Project Water, basin water pumped from the Middle and Upper sub-basins, and water pumped from the Conejo

Creek. A total of 1,900 AF per year of applied water imported to the Lower GMA sub-basin benefits recharge.

The net result of Camrosa's operation is a benefit to the GMA's primary goal of protecting the various basins under their management from overdraft. The availability of Camrosa water for irrigation at a reasonable price deters additional well drilling or extensive pumping of existing wells in the Lower Sub-basin.

Summary of Philosophy: The operation of the Basin must assure all of the beneficiaries of this water supply that a reliable water source will be available and that no individual or entity will suffer damages from the operational alternatives selected. Because Camrosa is the largest user of basin water and has established access to alternate water sources, Camrosa can act as the basin management control point by varying its pumping operation to both prevent water shortages and optimize the storage potential of the Basin.

Both the Boyle Reports and observed conditions in the Basin demonstrate that the basin although very limited in capacity, recharges very rapidly during wet cycles or through applied recharge. The limited size, area served, and few number of basin users provide a manageable environment which can be use to optimize the benefits of the unique features of the Basin to the benefit of all concerned interests.

Minimum Storage Requirements

The ModFlow model of the Basin developed by Boyle projects basin water levels at three key points located in the various zones of the Basin. These locations are highlighted in Exhibit A and identified as the locations of the Stuart Well, the Fitzgerald Well, and the Gerry No. 1 Well. Hydrographs for the Base Case conditions illustrate where water levels would be with average rainfall and average pumping observed over the past 7 years.

Historically water levels have been much lower than in the recent past. As illustrated by hydrographs for the period of 1955 through 1964 (See Exhibit B) water levels dropped dramatically in each sub-basin. Also illustrated is the dramatic rise in water levels following a wet weather pattern and the start-up of the Calleguas imported water system.[9]

Historical Water Elevations (1955 to 1983)

	Lower AF	Middle AF	Upper AF
Average Elev.	135	210	205
Low Elev.	70	80	110
Difference	65	130	95

[9] "Development of a Two-Dimensional Digital Groundwater Flow Model for the Santa Rosa Valley Groundwater Basin"; Martin Feeney, The Consortium of the California State University, 1987

These historical records can be used to establish a minimum water level for each sub-basin that will assure water supplies to all well operators. As with other guidelines of the Plan, the minimum levels selected are conservative.

Upper Sub-Basin Minimum Storage Levels: The Upper sub-basin contains the least storage capacity; 35,000 AF of which 10,000 to 15,000 is recoverable. However, the Upper sub-basin also receives the most immediate benefits from rainfall. Routine exercise of this portion of the basin between wet cycles may be very beneficial. Operations should not however cause projected or observed water levels to fall below 125 ft above sea level at the Stuart Well.

Middle Sub-Basin Minimum Storage Levels: The Middle sub-basin storage capacity of 41,000 AF contains approximately 12,000 to 18,000 AF of recoverable storage. This sub-basin also recharges very rapidly and benefits from both rainfall and stream recharge from the Conejo Creek. Operations should not, however, cause projected or observed water levels to fall below 125 ft above sea level at the Fitzgerald Well.

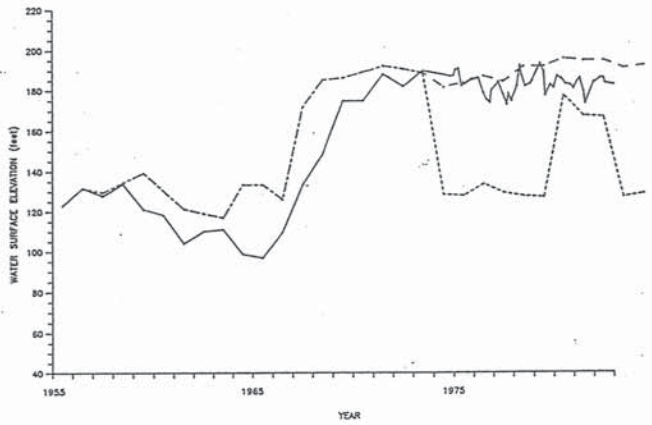
Lower Sub-Basin Minimum Storage Levels: The Lower sub-basin storage capacity is the largest of the three; approximately 94,000 AF. This portion of the basin historically recharges very slowly compared to the other sub-basins. This sub-basin is also the linked to the Pleasant Valley Groundwater Basin and supplies some recharge to the Pleasant Valley Basin via subsurface flows. Reduced water levels in the lower sub-basin will reduce the hydraulic gradient between the Pleasant Valley and the Santa Rosa basins and consequently reduce subsurface inflows.

The Lower sub-basin is outside the jurisdiction of this Plan and within the Fox Canyon GMA boundaries. The Lower sub-basin is, however, within the service area of Camrosa Water District. Camrosa imports approximately 1,900 AFY to the Lower sub-basin. The net result of Camrosa's operation is a benefit to the GMA's primary goal of protecting various basins under their management from overdraft. The availability of Camrosa's irrigation water at a price below imported water costs has prevented additional well drilling over the Lower sub-basin and held overall pumping to a minimum.

Extraction rates from the Lower basin are managed by the GMA. However, the GMA's management plan is based upon a very large set of groundwater basins and sub-basins. The finite nature of the Santa Rosa sub-basins is not well represented in the overall GMA management plan. To aid the GMA in its management efforts, care will be taken to prevent water levels in the lower sub-basin from dropping below 100 ft. above sea level. This will be accomplished through Camrosa's continued supply of competitively priced irrigation water to the properties overlying this portion of the basin. By utilizing economic incentives Camrosa can discourage expanded well production in the area and, with the planned delivery of Conejo Creek Project water to this area, effect even further reductions in basin water use, if necessary.

Exhibit B

STATE WELL NO. 2N/20W-26B3
NODE 13,9



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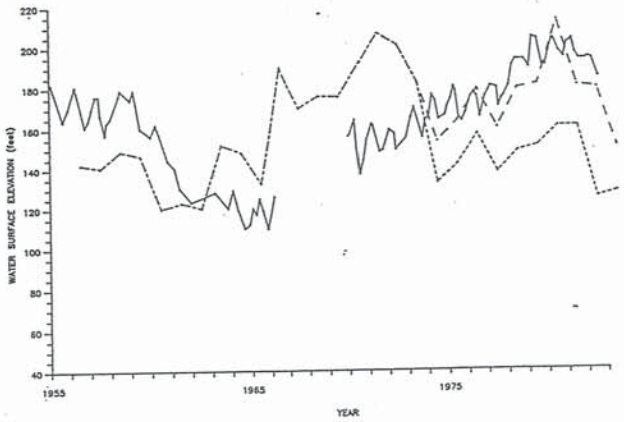

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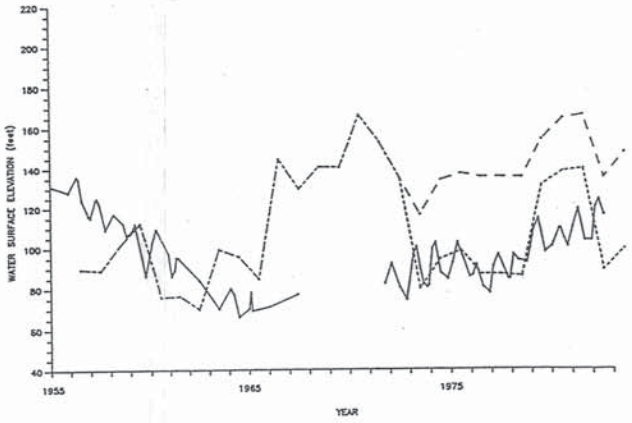

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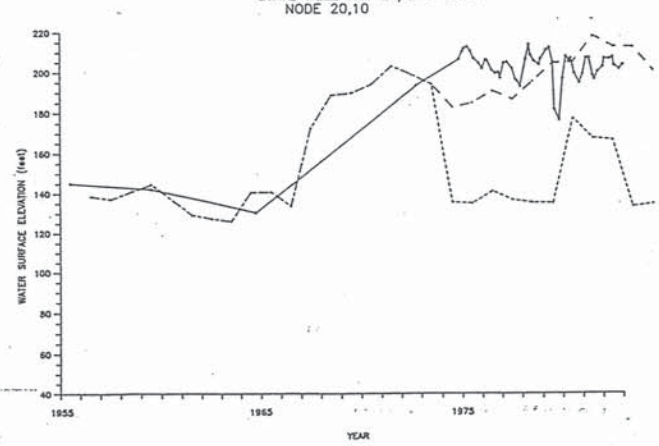

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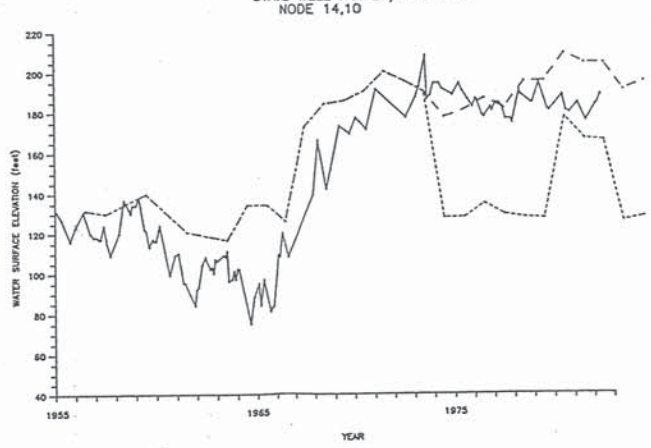

LEGEND

HISTORIC MEASURED WATER LEVELS

VERIFICATION RUN SIMULATED WATER LEVELS

SIMULATED WATER LEVELS – CEASATION OF HCTP EFFLUENT

WATER WELL HYDROGRAPHS

Santa Rosa Valley
Ground Water Basin

The net result of the Plan's maintenance of a minimum storage level in the Lower sub-basin will be a fixed sub-surface water supply to the Pleasant Valley Groundwater Basin. By maintaining a constant hydraulic gradient up-stream of Pleasant Valley Basin, the Lower sub-basin will act as a buffer to any actions taken up gradient of the Lower sub-basin. Historical flows to the Pleasant Valley Basin will continue undisturbed and the actual volume need not be exactly quantified.

YIELD OBJECTIVES AND ACTION PLAN

Annual Water Budget

The Council will produce an annual water budget based upon the proposed pumping projections of each well pumped in the basin. The council will review the pumping projections, evaluate projected storage levels in relation to the Plan's minimum storage levels, review prior year production reports and, based upon the guidelines of this Plan, adopt an annual budget.

The annual budget will include a state of the basin report, updates on the progress of any projects related to basin operation, and describe any new projects to be implemented during the upcoming year.

Evaluate Pumping Capacities

The vast majority of the total pumping capacity within the Basin is concentrated in the Middle sub-basin. Camrosa and SRM will develop a plan to utilize existing pumping facilities and investigate sites for additional pumping facilities to achieve a better balance and more flexible pumping scheme.

B. BASIN QUALITY

Management of the quality of water in the Arroyo Santa Rosa Basin requires a more complex approach than management of basin yield. Far more variables are involved and much more new information is required. Quality parameters vary based upon the type of use. Some pollutants occur naturally, other have resulted from historical land use practices no longer employed. Some pollutants continue to enter the water supply on a regular basis and there are other potential sources. Management of the basin quality will require the efforts of all the residents of the Santa Rosa Valley, not only the Basin pumpers.

QUALITY OBJECTIVES AND ACTION PLAN

The California Regional Water Quality Control Board (RWQCB), Los Angeles Region, adopted the Water Quality Control Plan, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties in 1994 (Basin Plan). This plan specifies the types of beneficial uses for each watershed or sub-section of the watershed in Ventura County and has established water quality objects for each groundwater basin based upon designated

beneficial uses for surface waters impacting the basins. The beneficial uses of the water bodies impacting the Santa Rosa Basin (Basin No. 4-7) are:

Arroyo Conejo -	Municipal water supply, groundwater recharge, freshwater replenishment, water contact recreation, non-contact water recreation, warm freshwater habitat, wildlife habitat, habitat for rare/threatened species.
Conejo Creek -	Municipal/industrial/agricultural supply, groundwater recharge, freshwater replenishment, water contact recreation, non-contact water recreation, warm freshwater habitat, wildlife habitat, spawning/reproduction habitat.
Arroyo Santa Rosa -	Municipal supply, groundwater recharge, freshwater replenishment, water contact recreation, non-contact water recreation, warm freshwater habitat, wildlife habitat.

The established water quality objectives for the Santa Rosa Basin are:

Total Dissolved Solids -	900 mg/L
Sulfate -	300 mg/L
Chloride -	150 mg/L
Boron -	1.0 mg/L

In addition to these water quality objectives those using Santa Rosa Basin water have established water quality requirements and water quality desires. Domestic users are required to meet all California Department of Health Services Primary Drinking water Standards. These standards contain limits for a large number of mineral, organic and biological contaminants.

Agricultural users have a variety of quality requirements based upon the crop irrigated. Chloride, however, is of the most universal concern. Chloride levels in excess of 100 mg/L may impact crop yields.

Water quality desires among the various users is much higher than the RWQCB basin objectives, DOHS primary standards or the maximum chloride tolerance for various crops. Domestic users would benefit from reductions in TDS and hardness. Agriculture users would benefit from reductions in chlorides, boron and other salts.

To achieve the quality objectives of those utilizing Basin water, a long-term plan must be developed and implemented. The following key elements of the Water Quality Management Plan will provide a vehicle to achieve the long-term objectives of those utilizing the Basin.

Water Quality Model

In 1987 a water quality model was developed for the Santa Rosa Basin. This model can provide the foundation for an updated and more detailed model, which will enable basin users to determine the best means of managing water quality. The key components of the model are the quantification of annual mineral and contaminate loading on the basin, quantification of annual mineral exports, sources of mineral loading and contamination and forecasting quality conditions based upon various actions or inaction. Work on the Quality model is scheduled to begin in July 1997.

Routine Water Quality Monitoring Program of the Basin

Once a model of the basin quality is in place a routine sampling program including surface waters, storm waters and groundwater will be established to monitor basin quality. The routine program will measure success in attempts to improve quality, alert basin users of changes in quality and provide basin users with an early warning of any new threats to quality that may arise. A routine water quality-monitoring program is partially in place and is scheduled for complete implementation in fiscal year 1997-98.

Water Quality Public Information Program

It is reasonable to assume that a good portion of the mineral loading and other contamination or potential contamination is the result of land use directly over the basin. Land use over the basin is limited to low density residential, agriculture, open space and recreation. No industrial or commercial uses currently exist.

A public information program which targets homeowners, custom farming operations, large farming operations, and well operators could reduce current mineral loading and prevent future contamination.

Homeowners and custom farming operations will be provided with information regarding maintenance of private septic systems; proper use and disposal of household, garden and farming chemicals and fertilizers; and proper disposal of livestock waste.

Large farming operations, particularly tenant farmers new to the area, will be apprised of the ground water quality concerns over the basin and provided with guidelines for best management practices in farming over the basin.

Well operators will be provided with information to assess the security of their wellhead, guidelines for maintenance, restoration, abandonment, destruction of wells. Guidelines will also be provided for construction of new wells that may be unique to the Santa Rosa Basin.

The public information program for homeowners and custom farming operations will be developed beginning in July 1997 and implemented as various components are completed throughout 1998. The assistance of the local farm bureau and the UC extension will be sought to develop a program for large farming operations. The County of Ventura's Water Resource Department and state agencies provide a great deal of information on

well head protection, well construction and well abandonment that may be made available to all well operators throughout the basin. This information can be a part of the Santa Rosa Basin Council regular meeting agenda's.

Abandoned Well Identification and Destruction Program
Over three hundred recorded wells have been constructed in the basin. Some wells have been destroyed, a few are actively pumped, some are used only to gather data and many are simply abandoned. Identification of all of these wells has already begun. An annual budget will be established by Camrosa to properly destroy wells which are no longer useful. A five-year program to properly destroy these wells will begin in July 1997.

Annual Reporting
Annual State of the Basin to EPA, RWQCB, Ventura County, homeowners, landowners and Basin users. The first state of the Basin will be published in October 1997. Annual reports will follow each October.

Treatment of Basin Water
Camrosa is conducting a pilot program to treat basin water for general minerals, specifically nitrates. The results of the pilot work will be complete in spring of 1997. Based upon the results of the pilot study Camrosa will pursue development and selection of the various alternatives to construct and operate a full-scale mineral removal and disposal system. Development of alternatives and selection of the final process is scheduled for completion in fiscal year 1997-98.

Santa Rosa Mutual is also interested in the outcome of the pilot project and will have an opportunity to participate with Camrosa in alternative development and final process selection, if they determine mineral removal to be a feasible direction for their operation.

Interim Emergency Plan
Camrosa and Santa Rosa Mutual will develop interim procedures for supplying drinking water to SRM customers in the event drinking water standards cannot be met by SRM wells. These interim procedures will be intended to meet SRM domestic customers' needs until permanent solutions can be developed and implemented.

VI. APPENDIX

Memorandum of Understanding
Regarding Groundwater Basin Management
in the Arroyo Santa Rosa Groundwater Basin

1. This Memorandum of Understanding regarding Arroyo Santa Rosa Groundwater Basin Management Plan ("MOU") is entered into as of the 24th day of April, 1997, at Camarillo, California, by and among the Camrosa Water District ("Camrosa"), a county water district; Santa Rosa Mutual Water Company ("Santa Rosa"), a mutual water company; and the undersigned (a) private individuals, (b) private entities, (collectively "Property Owners"), all of whom may from time to time pump groundwater from wells in the Arroyo Santa Rosa Groundwater Basin ("Basin").

Factual Recitals

2. The parties to this MOU hereby acknowledge the following facts, conditions, and intentions of the various parties related to the implementation and administration of the Arroyo Santa Rosa Groundwater Basin Management Plan (Plan):

A. The Plan was developed through the joint efforts of all the Parties to this MOU pursuant to the Groundwater Management Act of 1993 (AB3030; Water Code, Section 10750 et seq.)

B. Camrosa was organized in 1962 under the County Water District Law, Division 12, of the Water Code of the State of California. The Basin lies wholly within the Camrosa Water District which encompasses approximately 18,000 acres, entirely within Ventura County. Camrosa's boundaries include the Santa Rosa Valley and the Tierra Rejada Valley.

C. Santa Rosa, an investor-owned water company, lies wholly within the boundaries of the Camrosa Water District and delivers water pumped from the Arroyo Santa Rosa Groundwater Basin. Santa Rosa currently serves an area of about 1,600 acres and provides water to approximately 180 water users. Santa Rosa currently produces approximately 550 acre feet per year (AFY) of water from the Basin.

D. Property Owners are among the approximately 20 separate (a) private individuals, (b) private entities, and (c) public entities that own wells within the Basin. Such groundwater users in the Basin produce approximately 1,000 AFY of water which is used predominantly for agricultural purposes.

E. The Arroyo Santa Rosa Groundwater Advisory Council (Council) was formed as part of the Plan to oversee the basin management. Each entity or individual signatory to this MOU is thereby a member of the Council.

Agreement

3. The parties to this MOU hereby agree as follows:

4. **Implementation of the Adopted Plan:** The Council shall implement the Plan upon final adoption by the Camrosa and Santa Rosa Mutual Boards of Directors. The parties to this MOU agree to cooperate in sharing data required by the Plan and supporting the various elements of the Plan that may require the participants or cooperation among the parties of this MOU.

5. **Plan Administration:** Camrosa shall, within reasonable financial limitations, assist the Council in administering the adopted Plan. Such administration shall include assisting with the planning of meetings, preparing meeting documents, mailing notices and newsletters, gathering and compiling data, analyzing trends in water quantity and quality, and preparing a draft annual report of groundwater conditions in the Basin.

6. **Financial Obligations:** All parties agree that this MOU and its association to the Council implies or imposes no financial commitments or liability to the Plan, the Council or individual Party to this MOU. The financial obligations of the Plan are the responsibility of Camrosa and Santa Rosa and only then by separate agreement between the parties.

7. This MOU may be executed by any party in one or more counterparts, all of which, taken collectively, shall be considered one and the same document.

IN WITNESS WHEREOF, I hereby become a party to this MOU as of the day and year first written above.

Ronald J. Vogel, President
(Print Name)

(Sign)

CAMROSA WATER DISTRICT
(Representing)

Memorandum of Understanding
Regarding Groundwater Basin Management
in the Arroyo Santa Rosa Groundwater Basin

1. This **Memorandum of Understanding regarding Arroyo Santa Rosa Groundwater Basin Management Plan ("MOU")** is entered into as of the 12th day of September, 1997, at Camarillo, California, by and among the Camrosa Water District ("Camrosa"), a county water district; Santa Rosa Mutual Water Company ("Santa Rosa"), a mutual water company; and the undersigned (a) private individuals, (b) private entities, (collectively "Property Owners"), (c) public entities that own wells within the Basin, all of whom may from time to time pump groundwater from wells in the Arroyo Santa Rosa Groundwater Basin ("Basin").

Factual Recitals

2. The parties to this MOU hereby acknowledge the following facts, conditions, and intentions of the various parties related to the implementation and administration of the Arroyo Santa Rosa Groundwater Basin Management Plan (Plan):

A. The Plan was developed through the joint efforts of all the Parties to this MOU pursuant to the Groundwater Management Act of 1993 (AB3030; Water Code, Section 10750 et seq.)

B. Camrosa was organized in 1962 under the County Water District Law, Division 12, of the Water Code of the State of California. The Basin lies wholly within the Camrosa Water District which encompasses approximately 18,000 acres, entirely within Ventura County. Camrosa's boundaries include the Santa Rosa Valley and the Tierra Rejada Valley.

C. Santa Rosa, an investor-owned water company, lies wholly within the boundaries of the Camrosa Water District and delivers water pumped from the Arroyo Santa Rosa Groundwater Basin. Santa Rosa currently serves an area of about 1,600 acres and provides water to approximately 180 water users. Santa Rosa currently produces approximately 550 acre feet per year (AFY) of water from the Basin.

D. Property Owners are among the approximately 20 separate (a) private individuals, (b) private entities, and (c) public entities that own wells within the Basin. Such groundwater users in the Basin produce approximately 1,000 AFY of water which is used predominantly for agricultural purposes.

E. The Arroyo Santa Rosa Groundwater Advisory Council (Council) was formed as part of the Plan to oversee the basin management. Each entity or individual signatory to this MOU is thereby a member of the Council.

Agreement

3. The parties to this MOU hereby agree as follows:

4. **Implementation of the Adopted Plan:** The Council shall implement the Plan upon final adoption by the Camrosa and Santa Rosa Mutual Boards of Directors. The parties to this MOU agree to cooperate in sharing data required by the Plan and supporting the various elements of the Plan that may require the participants or cooperation among the parties of this MOU.

5. **Plan Administration:** Camrosa shall, within reasonable financial limitations, assist the Council in administering the adopted Plan. Such administration shall include assisting with the planning of meetings, preparing meeting documents, mailing notices and newsletters, gathering and compiling data, analyzing trends in water quantity and quality, and preparing a draft annual report of groundwater conditions in the Basin.

6. **Financial Obligations:** All parties agree that this MOU and its association to the Council implies or imposes no financial commitments or liability to the Plan, the Council or individual Party to this MOU. The financial obligations of the Plan are the responsibility of Camrosa and Santa Rosa and only then by separate agreement between the parties.

7. This MOU may be executed by any party in one or more counterparts, all of which, taken collectively, shall be considered one and the same document.

IN WITNESS WHEREOF, I hereby become a party to this MOU as of the day and year first written above.

FRANK P. STABEN
(Print Name)

(Sign)

Santa Rosa Mutual Water Co.
(Representing)

Prepared for

Camrosa Water District

Santa Rosa Groundwater Basin
Management Plan Update
Final Report

Prepared by

BOYLE ENGINEERING CORPORATION

Project Manager	Jay T. Spurgin, PE
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April 24, 1997

VT-C13-200-02

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FIGURES (following text)

APPENDICES (following figures)

PLATES (in pocket)

1.0 INTRODUCTION

A groundwater flow model was developed as a tool for managing water resources of the Santa Rosa Basin. It replaces a model originally developed in 1987.

This report summarizes work performed as part of the Santa Rosa Groundwater Basin Management Plan Update. The work involved the development of a groundwater flow model of the Santa Rosa Groundwater Basin for use as a tool in managing water resources of the basin, evaluating conjunctive use alternatives, and evaluating alternatives for reducing the District's reliance on imported water.

The model developed as part of the current study is designed to replace an earlier groundwater flow model developed for the District in 1987 (Finite Element Ground Water Model Version 14, FEGW14, Johnson and Yoon, 1987). Accordingly, the present model relies extensively on the findings of the earlier work, including hydrologic relationships, aquifer characteristics, and general relationships between major inflow and outflow components of the basin's water budget.

2.0 MODEL FORMULATION

2.1 MODFLOW Model

The groundwater model employed is based on the U.S. Geological Survey's finite difference code known as MODFLOW (McDonald and Harbaugh, 1988).

The model is based on the USGS finite-difference code known as MODFLOW.

MODFLOW accomplishes its solutions for groundwater conditions using several core "packages" to solve the basic groundwater flow equations, combined with a number of optional "packages" to address model boundary conditions (inflows/outflows/water levels), recharge by deep percolation, recharge through streams, pumping, etc. The Santa Rosa Basin Model was constructed using the following packages:

Table 1
Santa Rosa Basin Model Packages

Package	Purpose
Basic Package (BAS)	Administrative functions, model definition, time discretization
Block-Centered Flow (BCF)	Grid dimensions, aquifer properties (aquifer bottom, hydraulic conductivity)
Output Control (CTL)	Instructions for model output
Well Package (WEL)	Basin pumping/discrete recharge events
River Package (RIV)	Recharge from Arroyo Conejo and Conejo Creek
Recharge Package (RCH)	Rainfall recharge/recharge from applied water
General Head Boundary (GHB)	Water-level dependent basin inflow (eastern boundary)

In addition, several pre- and post-processing routines are employed to assist in the development of input data files, and to assist in the extraction of key model output information. Following is a summary of the pre- and post-processors:

Table 2 Santa Rosa Basin Model Pre- and Post-Processors	
Name	**Purpose**
Pre-Mod	Commercial product to generate and modify model packages
Well	Generate pumping input files (developed for this project)
Recharge	Generate recharge files for rain recharge and recharge of applied water, based on user specified distribution of irrigated lands (developed for this project)
River	Generate river package input files, based on discharges at HCWWTP (developed for this project)
Output	Read and tabulate key water budget components from MODFLOW output file (developed for this project)
Hydrograph	Read and tabulate hydrograph data for up to 9 wells from MODFLOW output (code modification)
Post-Mod	Commercial product to convert MODFLOW binary water level output file for use by water level contour mapping software
ZONEBUDGET	Commercial product to provide separate accounting of groundwater conditions for each of the three sub-basins within the model

2.2 Model Grid

The model grid consists of 48 columns (C) and 26 rows (R) defining uniformly sized cells measuring 500 feet by 500 feet. There are a total of 620 active cells (the model therefore covers a total area of approximately 3,600 acres). The grid was oriented such that one set of grid lines was generally parallel to the principal direction of ground water flow. The boundaries of the model grid were set to coincide as much as possible with the known geologic boundaries of the basin as defined in the earlier model (Johnson and Yoon, 1987). **Plate 1** (in pocket) illustrates the model grid superimposed on a map of the basin.

2.3 Time Discretization

The model operates on a monthly time step (stress period). It simulates a seven year period from 1989 through 1995. Forecasting of alternative basin pumping and inflow conditions is for a seven year period, using a monthly time-step.

2.4 Aquifer Properties

The basin has been represented as a single-layer system. This represents a departure from the previous model, which treated the basin as a two-layered system. Although stratigraphic information from wells in the basin suggested that several zones could be discriminated in portions of the basin, no separate water level data existed which would allow separate calibration of these zones. Further, wells are typically screened through multiple layers, making it difficult to allocate their pumping to individual zones. It was concluded that a single-layer model provided an appropriate representation of the hydrologic system.

The basin has been represented as a single layer.

Estimates of aquifer properties (hydraulic conductivity, elevation of aquifer base, and storage coefficient) must be assigned to each cell within the model's domain. Initial estimates of aquifer properties were obtained from the earlier model (Johnson and Yoon, 1987). These properties were subsequently adjusted to account for representation of the basin as a single layer, and again during calibration as dictated by differences between observed and predicted water level conditions.

The distribution of aquifer parameters (hydraulic conductivity and elevation of the aquifer's base) assigned in the model are contained in the model input files in the Appendix to this report. **Figure 1** shows the approximate elevation of the base of the aquifer as represented in the model. A uniform value of 0.02 was used for the storage coefficient.

2.5 Pumping

The locations of wells for which pumping records are available are shown on **Plate 1** (see **Appendix 1**). While some wells report values of monthly pumping, complete data on pumping of individual wells within the basin is available for annual pumping only. The distribution of pumping on a monthly basis was estimated using a combination of data for wells reporting monthly values and the monthly distribution of imported supplies, since this is taken to reflect monthly demands for irrigation water. See **Appendix 2** for a summary of well extraction data. Complete extraction data is included on diskette in **Appendix 5**. The monthly distribution was taken to be constant from year to year, and is shown in Table 3:

Table 3
Monthly Distribution of Pumping
(values shown are fraction of annual value)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0.06	0.05	0.06	0.08	0.09	0.10	0.12	0.11	0.09	0.09	0.08	0.07

Toward the end of this study, it was noted by District staff that one well in the Upper Sub-Basin (Caston well 2N/19W-20N1), for which pumping data was not available, had, in fact, been extracting water from the basin for at least the past 10 years (estimated average pumping rate 170 af/yr). This additional pumping, along with any other new or revised information which becomes available, can be incorporated into future updates to model baseline data.

2.6 Recharge

Groundwater recharge is estimated based on measured rainfall and estimates of water applied for irrigation.

The earlier model (FEGW14) included a detailed soil-moisture accounting routine as part of the estimation of recharge. The current model predicts recharge as a function of rainfall and applied water using relationships extracted from the prior modeling results. Also, the previous model included a detailed rainfall/runoff routine for estimation of streamflows. No such capability exists in MODFLOW.

A review of the prior model's water budget (Table 3-1, Estimated Historical Water Balance, Johnson and Yoon, 1987) reveals groundwater recharge to be relatively constant, and largely independent of runoff. Accordingly, no separate prediction is made of surface runoff leaving the basin.

Annual values of recharge of rainfall and deep percolation of applied water are estimated using a highly correlated relationship obtained during previous modeling (R^2=0.9) relating annual values of ground water recharge and annual values of combined rainfall and applied water. For purposes of modeling, lands within the basin were classified as follows:

- Irrigated Lands - Those areas receiving recharge from a combination of deep percolation of applied irrigation water and deep percolation of rainfall.
- Other Lands - Those lands on which the principal source of recharge is deep percolation of rainfall.

The distribution of land types was obtained from aerial photographs of the basin taken in 1993. The classification of lands as represented in the model is shown in **Figure 2.**

The distribution of land types receiving recharge was estimated from aerial photographs of the basin taken in 1993.

The monthly distribution of recharge is estimated based on measured values of monthly rainfall (see **Appendix 3**) coupled with a typical monthly distribution of water supplied for irrigation, as shown in Table 4. The monthly distribution used to estimate recharge was lagged by several months relative to the time at which water is applied, to account for the delay between application and the time at which the water actually reaches the water table.

Table 4
Monthly Distribution of Recharge
(values shown are fraction of annual value)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0.08	0.08	0.08	0.07	0.07	0.08	0.09	0.09	0.09	0.09	0.09	0.09

2.7 Boundary Conditions

Bailey Fault - The feature locally referred to as the Bailey Fault (**Plate 1**) is represented by a set of model cells which have been assigned a hydraulic conductivity value which contrasts with values in adjacent cells to simulate the resistance to flow offered by this feature.

Sub-Surface Inflow - Groundwater inflow at the easternmost end of the basin is estimated using a general-head boundary condition. In this formulation, sub-surface inflows vary in proportion to water levels predicted within the basin. Water levels outside the basin are specified according to water levels observed in a well (Maulhardt Well 2N/19W-21H1) located outside of the basin. Boundary conditions employed in the model are shown in **Figure 3.**

2.8 Stream Recharge

Parameters defining the monthly and annual recharge of Hill Canyon WWTP flows were calibrated to earlier modeling results, and results of gain/loss studies reported in previous work. Cells in which stream recharge is simulated are shown in **Figure 3.** Monthly streamflow and Hill Canyon WWTP discharge data are included in **Appendix 3.**

2.9 Import/Export Water

Estimates of the amounts of water imported to the basin are available on a monthly basis. An estimate of the amount of water exported from the basin was available for one year only. Remaining years were estimated based on the proportion calculated for the single year in which data were available for both imported and exported quantities. The net of these quantities is assumed to be distributed within the basin for use. See **Appendix 4** for estimates of basin water balance for the study period 1989-95.

3.0 CALIBRATION RESULTS

3.1 Initial Calibration (1987 - 1993)

The model was initially calibrated against transient hydrologic conditions within the basin for the period 1987 through 1993. Calibration results were considered good for the early years of this calibration period (1987 through about 1991). However, beginning in about 1993, water levels in several wells in the easternmost portion of the basin rose significantly, a behavior which could not be duplicated by the model as formulated at that time. It was also unclear from the water level records whether this response would continue beyond 1993, the end of the simulation period. Given the relatively poor calibration results for the final years of the simulation, and the uncertainty about future water level conditions, a decision was made to shift the modeling period from 1987 to 1993 to the period 1989 to 1995.

3.2 Revised Calibration (1989 - 1995)

In light of the rising water levels observed in several wells in the eastern portion of the basin, the modeling period was shifted to the 7-year period 1989 to 1995, and the model was re-calibrated. Two significant changes in the model's formulation were made during this calibration process. First, an additional source of inflow to the model was incorporated to account for flow conditions observed in the Arroyo Santa Rosa. During a field reconnaissance of the stream during October, 1996 it was observed to carry a surface discharge estimated at about 2 cfs. This flow disappeared abruptly near the intersection of the creek with Santa Rosa Road, indicating significant losses of water from the channel to the ground water system. Second, in attempting to duplicate the water level rise observed in several wells in the eastern portion of the basin, while at the same time maintaining relatively stable water level conditions elsewhere in the basin, a zone of low permeability was introduced. This zone of low permeability is inferred to be either fault-related, similar to conditions associated with the Bailey Fault, or stratigraphic in origin (low permeability sediments).

A zone of low permeability is inferred east of the Bailey Fault. Combined with the Bailey Fault, this feature divides the basin into three sub-units.

With these two significant changes, the calibration of the model was considered good. Comparisons of predicted versus observed water

levels at several locations in the basin are shown in **Figures 4, 5, 6 and 7.** The locations of the wells from which these hydrographs are taken are shown in **Figure 8. Figure 8** also shows the water table estimated by the model for the end of 1989.

Introduction of a zone of low permeability in the basin model effectively divides the basin into three sub-basins, herein referred to as the Upper Sub-Basin (easternmost area, comprising about 1,250 acres), the Middle Sub-Basin (middle portions of the basin including Arroyo Conejo, comprising about 1,030 acres) and the Lower Sub-Basin (comprising about 1,340 acres). The boundary between the Middle and Lower Sub-Basins is formed by the so-called Bailey Fault. These divisions are shown in **Plate 1.**

Comparison of basin outflows to the Pleasant Valley Basin as predicted by the previous model (Johnson and Yoon, 1987) and the current model reveals a notable difference. The average subsurface outflow from the previous model for the period 1972-83 was predicted to be about 725 af/yr. The current model's prediction for average subsurface outflow for the period 1989-95 is approximately 480 af/yr. The primary reason for this difference is that the previous model did not simulate a pumping depression in the Lower Sub-Basin (in the vicinity of Gerry wells, 2N/20W-23G1, G2, G3, and H2, see **Plate 1**), as newer data would indicate. See for example Figure 3.6 from the previous model report (Johnson and Yoon, 1987), in which a uniform gradient to the west is evident. The previous model gradient resulted in a boundary water level elevation of about 80 feet at the lower basin limits, which appears to be too low. New data suggests a depression in the Lower Sub-Basin water table level (elevation at the Gerry wells of approximately 120 feet and elevation at Lamb well 2N/20W-22K2 of about 160 feet, see **Plate 1** and **Figure 8**) resulting in a local gradient to the east, away from the basin boundary. To achieve this shape in calibration it was necessary to restrict permeability at the boundary. Checks on geometry used in the previous model and the current model provide good agreement. Checks using continuity (Darcy's Law) indicate a subsurface outflow range of about 180 af/yr to over 1,100 af/yr, depending on the boundary condition assigned. The conclusion is that current conceptualization of the basin is more refined based on recent data, and the lower basin boundary representation is reasonable.

It is important to note that the model is presently calibrated for the set of observed water level conditions coupled with the various estimates of basin inflows and outflows (such as pumping, net imported water, etc.) as described above. In the event that it becomes possible to refine these estimates, it is likely that some additional calibration of the model will be necessary. In such a case, the magnitude of each of the predicted water budget components is also likely to change.

An example of data refinement which might suggest that the model be re-calibrated is the new pumping information for the Caston well in the Upper Sub-Basin (see Section 2.5 Pumping). To accommodate the additional well pumping of about 170 af/yr, re-calibration of the model would likely result in slightly higher Upper Sub-Basin inflow and/or slightly lower outflow to the Middle Sub-Basin (the level of additional pumping is only about 10 percent of the total Upper Sub-Basin inflow component).

Principal components of the basin's water budget as predicted in the groundwater model are shown in **Figure 9**. Table 5 summarizes these components for the model calibration period.

Table 5
Principal Components of Water Budget
Calibration Period (1989-1995)
Average Values, Acre-Feet/Year

	Sub-Basin		
Water Budget Component	**Lower**	**Middle**	**Upper**
Subsurface Inflow	0	180	301
Recharge (Rain + Applied)	1,109	700	546
River Leakage	23	1,113	700
Inflow Fr. Adj. Sub-Basin	495M; 67U	725U	7M
Total Inflow	*1,694*	*2,718*	*1,554*
Subsurface Outflow	477	32	6
Well Pumping	1,205	2,186	512
Outflow to Adj. Sub-Basin	0	495M; 7U	67L; 725M
Total Outflow	*1,682*	*2,720*	*1,310*

Note: L = Lower Sub-Basin, M = Middle Sub-Basin, U = Upper Sub-Basin

An estimate was made of the volume of water in storage at the beginning and end of the calibration period. The estimate was based on a specific yield of 10%. This value is within the range of values

reported by Johnson and Yoon (1987). Following is a tabulation of water in storage as of 1989 and 1995:

Table 6
Estimated Water in Storage
Values in Acre-Feet

	Year		
Basin	**1989**	**1995**	**Change**
Lower Sub-Basin	60,400	60,480	80
Middle Sub-Basin	26,890	26,870	-20
Upper Sub-Basin	25,790	27,490	1700
Total	*113,080*	*114,840*	*1,760*

Complete MODFLOW model input files for the 1989-95 calibration run are included on diskette in **Appendix 5.**

4.0 FORECASTING RESULTS

4.1 Future Baseline

The Future Baseline condition was constructed in order to provide a "baseline" against which "future" scenarios might be compared. For this purpose, the Future Baseline was assembled using near-average hydrologic conditions in the basin, repeated over the 7-year period. A synthetic record of average rainfall was constructed by distributing average annual rainfall for the basin (approximately 15 inches) according to an average monthly distribution of rainfall recorded at Oxnard, California, the nearest station with long-term records. Following is the monthly distribution of rainfall used to develop the Future Baseline condition:

Table 7
Monthly Distribution of Rainfall, Future Baseline
(values shown are fraction of annual value)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0.22	0.21	0.17	0.07	0.01	0.00	0.00	0.00	0.01	0.02	0.10	0.17

The Future Baseline is considered to represent a starting point for the basin and as such approximates recent average hydrologic conditions. Pumping rates for wells within the basin were set equal to the average of pumping reported for 1994 and 1995. Hill Canyon WWTP discharge to Arroyo Conejo were set equal to the rates reported for 1995. The net of water imported to and exported from the basin varied widely over the period 1989 to 1995. For purposes of the Future Baseline condition, the net water supply added to the basin was set equal to the average difference of imports and exports during the period 1989 - 1995 (net of 896 af/yr added to the basin). Starting water levels for the Future Baseline condition were set equal to water levels predicted by the model for the end of 1995.

The model's eastern boundaries with the Tierra Rejada Basin, and a small drainage area to the south of Terra Rejada, were both set equal to a condition prevailing until just prior to the recent period of heavy rain. This condition (general head boundary water level set equal to

elevation 504 feet) is believed to be representative of average recent hydrologic conditions, but unaffected by the heavy rainfall events recorded beginning about 1991. As such, recharge from live stream flow conditions observed along the Arroyo Santa Rosa in the east end of the basin was excluded from the Future Baseline.

Principal components of the basin's water budget and representative water level hydrographs for this condition are shown in **Figure 10**. Water levels are predicted to decline significantly in all three sub-basins, with the greatest declines in the upper and middle sub-basins. Natural (subsurface) outflows from the basin as a whole are lowest of all the scenarios considered, while subsurface inflow to the basin as a whole is highest of all the scenarios. Complete MODFLOW model input files for the future baseline simulation are included on diskette in **Appendix 5**.

4.2 Scenario 1 - Pumping Shift to Upper Basin

This scenario simulates a redistribution of pumping between the middle and upper sub-basins, such that approximately 1/3 of the total of the middle and upper sub-basin pumping occurs in the upper sub-basin, and 2/3 of the pumping occurs in the middle sub-basin. In effect, this represents an increase of about 590 acre-feet/year pumping in the upper sub-basin, with a corresponding decrease in pumping in the middle sub-basin.

Principal components of the basin's water budget and representative water level hydrographs for this condition are shown in **Figure 11**. The shift in pumping to the upper sub-basin causes a noticeable change in water levels in the upper sub-basin (as reflected by the forecasted water levels at a location near the Stuart well, **Figure 11**). Water levels in the middle sub-basin rise slightly, consistent with the reduced pumping from this basin.

4.3 Scenario 2 - Pumping Shift to Upper Basin Without Tierra Rejada Inflow

This scenario involves the same redistribution of pumping as in Scenario 1. However in this scenario, surface inflows from the Tierra

Rejada basin have been discontinued. Subsurface inflows continue to recharge the upper sub-basin as in prior scenarios.

Principal components of the basin's water budget and representative water level hydrographs for this condition are shown in **Figure 12.** Water levels decline significantly in all three sub-basins. The most significant declines are in the upper sub-basin where some locations within the model dewater. This has the effect of eliminating pumping in the affected cells. The water budget forecast for this scenario reflects this reduction in pumping, and slight recovery in water levels are shown in model hydrographs (for example the Stuart Well, beginning in about 2005, **Figure 12**). It may be concluded that the shift in pumping from the middle to the upper sub-basin cannot be sustained in the absence of the significant recharge from the Tierra Rejada basin. It is possible that a redistribution of pumping to other locations in the basin could be sustained, although such other pumping distributions were not tested.

4.4 Scenario 3 - Future Baseline Conditions With Tierra Rejada Inflow

This scenario involves conditions identical to those used to construct the Future Baseline condition, with the inclusion of recharge to the upper sub-basin by surface inflows from the Tierra Rejada basin.

Principal components of the basin's water budget and representative water level hydrographs for this condition are shown in **Figure 13.** Water levels are stable over the 7-year forecasting period. This behavior is consistent with the balance in inflow and outflow components of the water budget, also shown in **Figure 13.**

4.5 Scenario 4 - Weather Variation

This scenario was constructed in order to test basin response to a relative drought condition followed by a return to the hydrologic conditions prevailing at the conclusion of 1995. The first three years of the simulation used average rainfall conditions for the basin in 1989 and 1990 (average rainfall 8.5 inches), followed by four years in which rainfall was assumed to be equal to the long-term basin average of

about 15 inches. It was assumed that there would be no recharge of the upper basin by Tierra Rejada inflows during the first three years of the simulation, while recharge would occur during the final four years. All other conditions were as modeled in the Future Baseline condition.

Principal components of the basin's water budget and representative water level hydrographs for this condition are shown in **Figure 14.** Water levels are predicted to decline significantly from the during the first three years of the simulation (**Figure 14**), then recover in about the same amount of time beginning in the fourth year of the simulation. There were no areas of the model which dewatered in this scenario.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Following are the principal conclusions of this work:

- A three-dimensional, finite-difference groundwater flow model was constructed of the Santa Rosa Groundwater Basin for use as a water resources management tool.
- The model was successfully calibrated against basin groundwater conditions for the period 1989 through 1995.
- The model relies on estimates of natural and artificial hydrologic conditions, including rainfall, natural inflows and outflows, stream leakage, pumping, water applied for irrigation, Hill Canyon WWTP effluent discharge, water which is imported for use within the basin, and water which is exported from the basin. The model depends on reliable estimates of these water budget components.
- There is evidence of a subsurface condition which impedes groundwater movement from the eastern end of the basin to the central portion of the basin. This condition may be related to stratigraphic changes or faulting in the subsurface. This, along with the previously identified Bailey Fault, has the effect of dividing the basin into three sub-basins, herein named the lower sub-basin, the middle sub-basin, and the upper sub-basin.
- Extraordinarily wet conditions prevailing since about 1991 have caused a dramatic rise in water levels in the easternmost portion of the basin (the upper sub-basin). This rise may be the result of the combined effects of heavy rainfall, net surplus of imports/exports, reduced pumping in the upper sub-basin, and significant increases in inflows (both surface and subsurface) from the adjoining Tierra Rejada Basin.
- The basin currently receives a significant amount of recharge by infiltration of surface inflows from the adjoining Tierra Rejada Basin. This recharge may be critical to basin management alternatives which involve additional groundwater pumping from the upper sub-basin.
- The basin appears to respond relatively quickly to changes in weather/recharge conditions.

- Total basin storage as of 1989 is estimated to have been about 113,00 acre-feet. Total basin storage as of 1995 is estimated to have been about 115,000 acre-feet, representing a gain of about 2,000 acre-feet over the seven year period. These estimates are based on a specific yield of 0.10. Recoverable storage, defined to be that water which can be pumped from the basin by reasonable means, is expected to be about 60 percent of the water in storage.

- There are combinations of high pumping rates and low recharge conditions which have the potential to adversely effect hydrologic conditions in the basin. The most evident effect would be the drying up of wells, as has been reported during past drought conditions. In an effort to effectively manage the basin's resources, it may be appropriate to define water level elevations which would signal that such adverse conditions are imminent, and also serve as a limit for basin drawdown. Based upon review of long-term water level records of wells in the basin, and modeling of combinations of pumping and recharge which have led to unstable water levels, the following drawdown elevation limits are suggested:

  - Lower Sub-Basin—100 feet;
  - Middle Sub-Basin—125 feet;
  - Upper Sub-Basin—125 feet.

  Depths of wells vary greatly, as do water levels, pump settings, and interference between wells. As these elevations represent average conditions within the sub-basins, they cannot be relied upon to guarantee against dewatering of specific wells. Because of this, it is recommended that these values be re-evaluated frequently, and adjusted according to observed conditions in individual wells within the basin.

5.2 Recommendations

The following activities are recommended as ways for improving the reliability of the model, and enhancing its utility to CWD for future water resource management activities:

Additional Data Collection:

- Import/Export Data - The quantities of water imported to and exported from the basin represent a very significant fraction of the basin's water budget. Small errors in estimates of these quantities will translate into large errors in model predictions. Improved accounting of water entering and leaving the basin would improve the model's reliability.

- Pumping Data - Pumping has a significant effect on local water levels. More complete data on the timing and location of pumping would improve the model's reliability.

- Gaging of Streamflow of Arroyo Santa Rosa - Historically, this tributary stream carried water only intermittently, in response to major rainfall events. The discharge of this stream has reportedly increased in recent years, with flows of several cubic feet per second lasting over much of the year.

Other Activities:

The Tierra Rejada Basin represents an upstream source of surface and subsurface inflows to the Santa Rosa Basin. As such, changes in hydrologic conditions in the Tierra Rejada Basin will be felt to some degree in the Santa Rosa Basin. A basin-wide water budget is recommended as an initial step in quantifying hydrologic conditions in the Tierra Rejada Basin, and possibly refining estimates of inflows from the Tierra Rejada Basin to the Santa Rosa Basin.

6.0 REFERENCES

Johnson, Ronald L. and Young Yoon, 1987. Report on Santa Rosa Groundwater Basin Management Plan. Report prepared for City of Thousand Oaks.

Feeney, Martin B., 1987. Development of a Two-Dimensional Digital Ground Water Flow Model for the Santa Rosa Valley Ground Water Basin. Master of Arts Thesis, California State University.

Bailey, Thomas L., 1969. Geology and Ground Water Supply of Camrosa County Water District. Report prepared for Camrosa County Water District.

McDonald, Michael G. and Arlen W. Harbaugh, 1988. A Modular Three-Dimensional Finite-Difference Ground-Water Flow Model. U.S. Geological Survey Techniques of Water-Resources Investigations, Book 6.

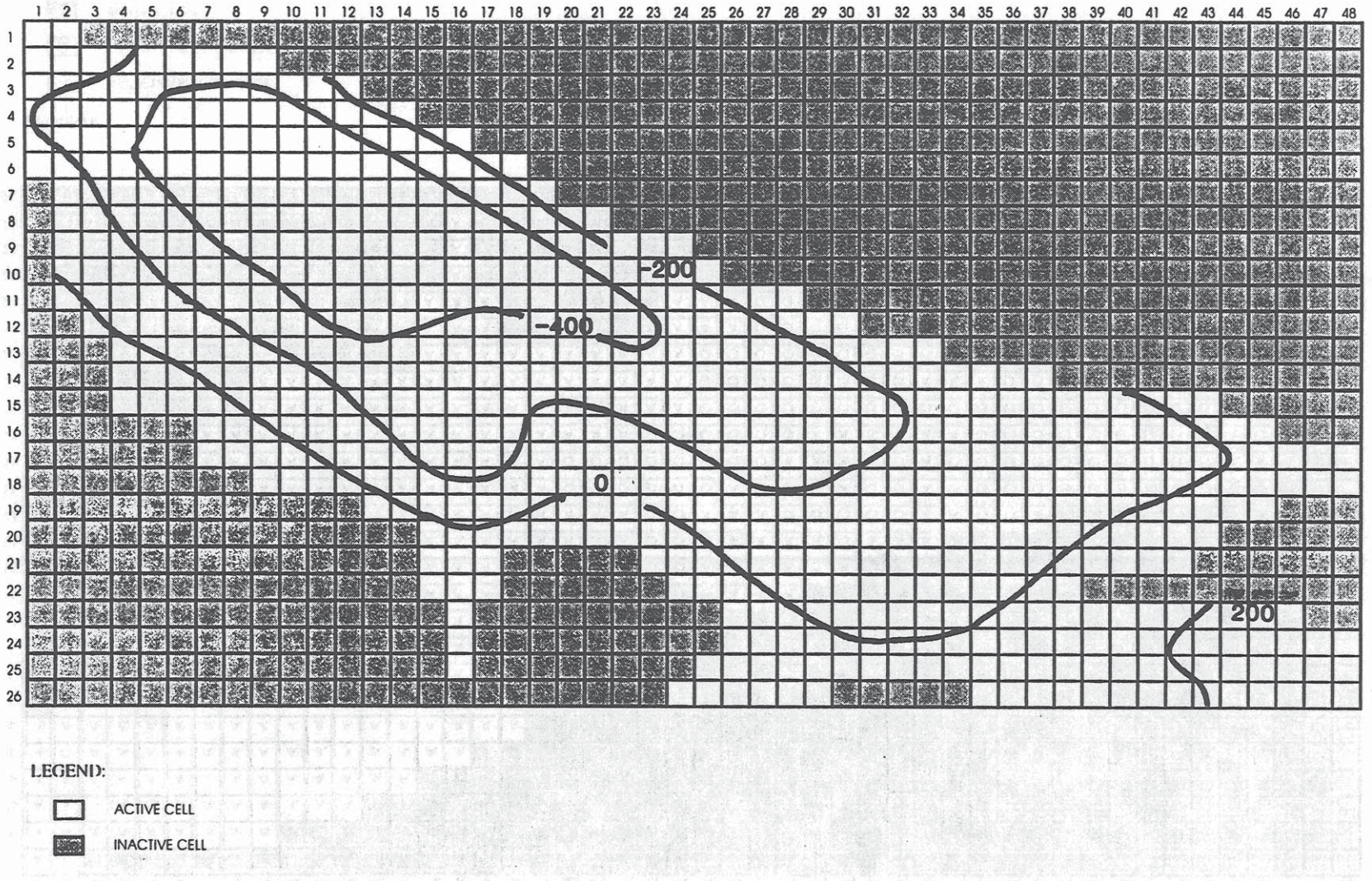
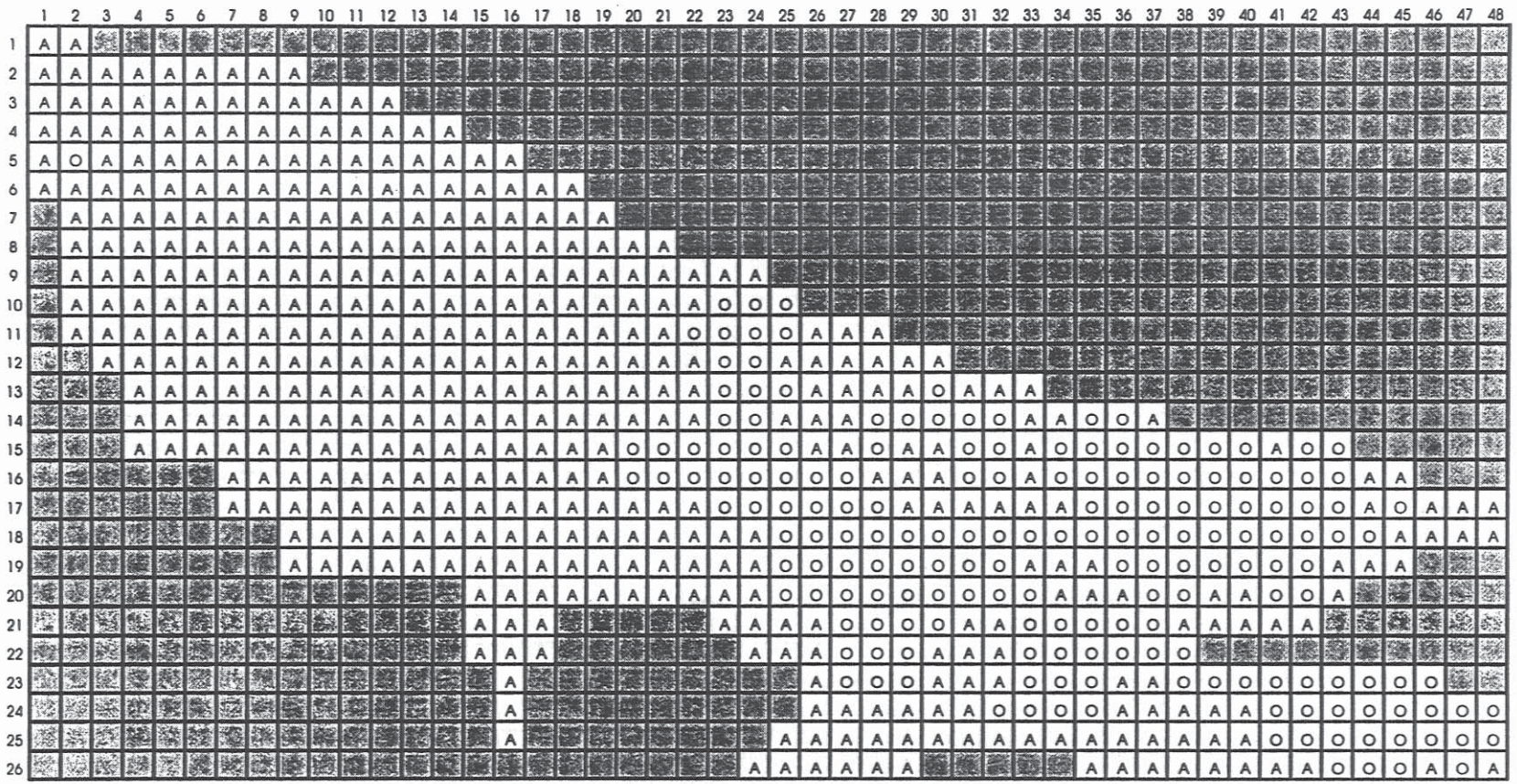


FIGURE 1. APPROXIMATE ELEVATION OF AQUIFER BASE, IN FEET



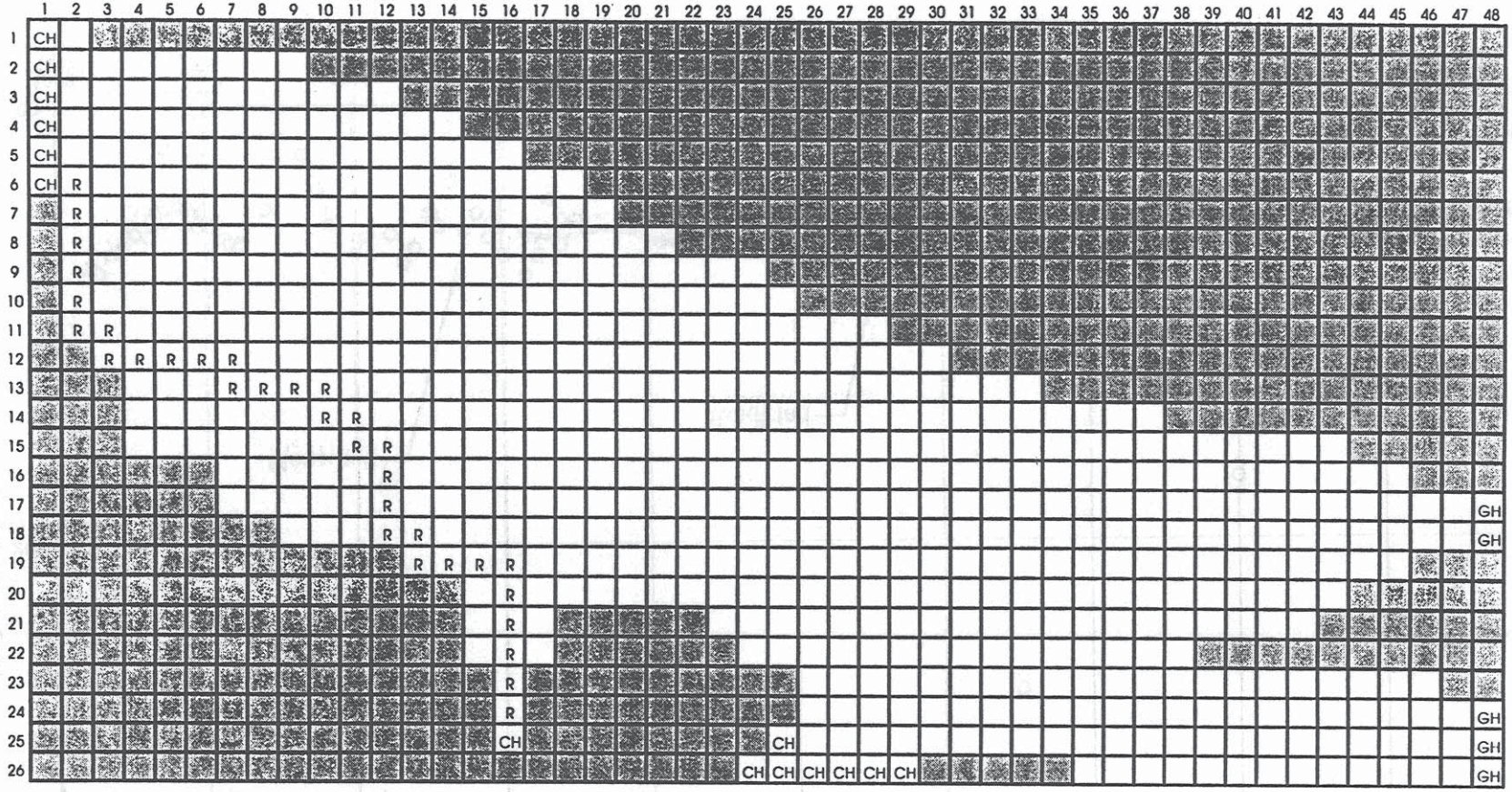
LEGEND:

A AGRICULTURAL LAND USE

O OTHER LAND USES (INCLUDES COMMERCIAL, RESIDENTIAL)

INACTIVE CELL

FIGURE 2. DISTRIBUTION OF LAND USES IN MODEL



LEGEND:

- R — RIVER CELL
- CH — CONSTANT HEAD CELL
- GH — GENERAL HEAD BOUNDARY CELL
- INACTIVE CELL

FIGURE 3. MODEL BOUNDARY CONDITIONS

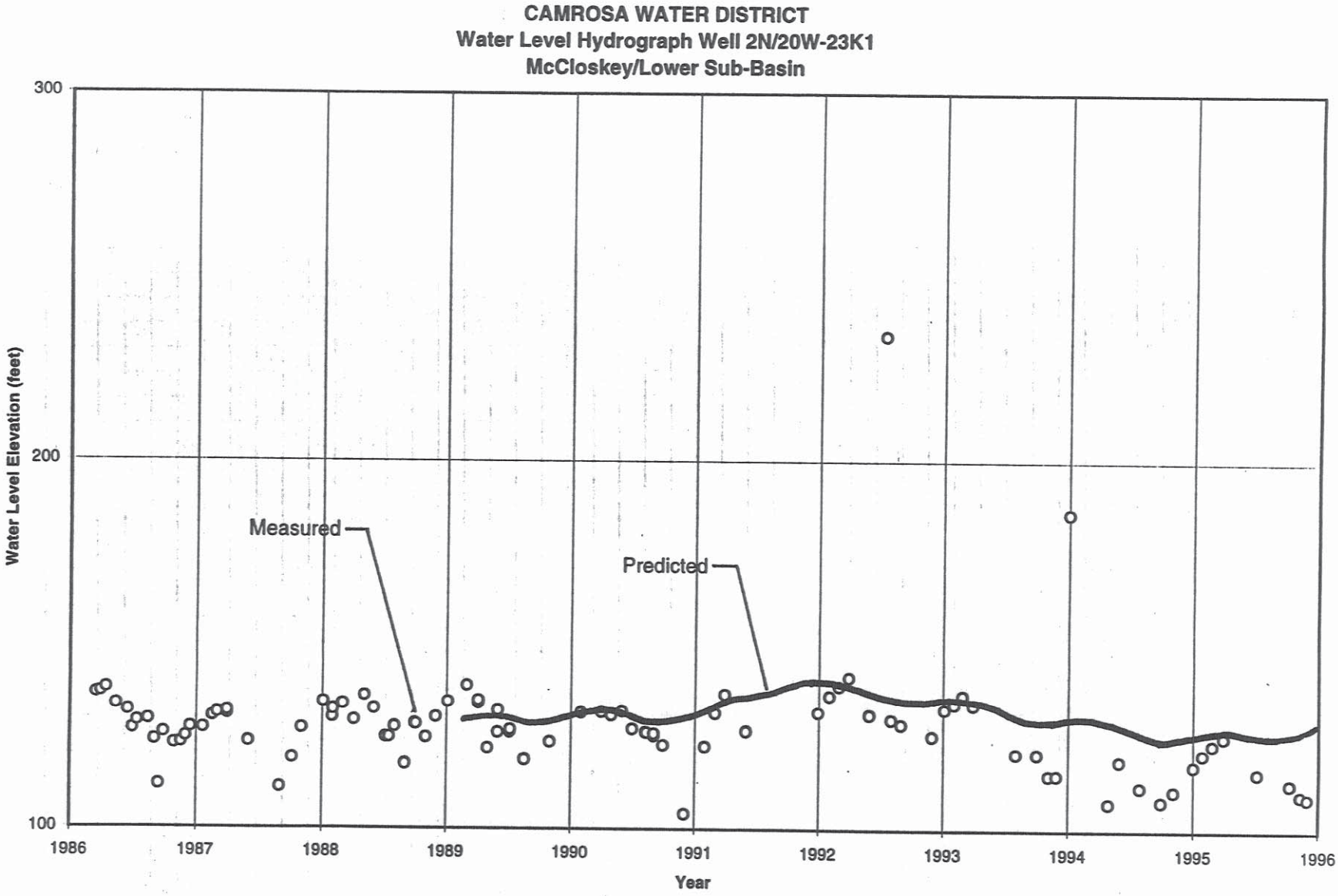


FIGURE 4. CALIBRATION WELL 23K1

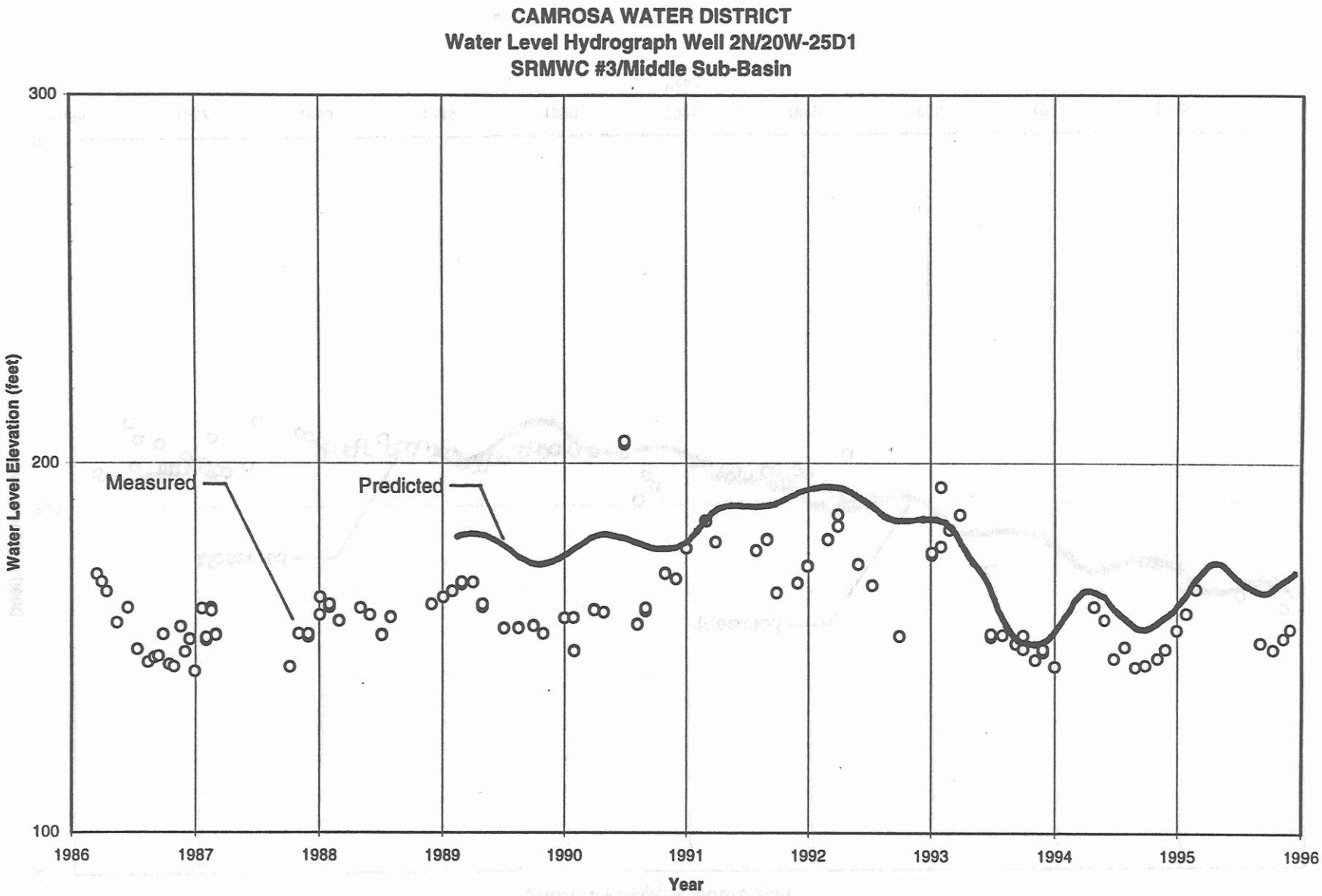


FIGURE 5. CALIBRATION WELL 25D1

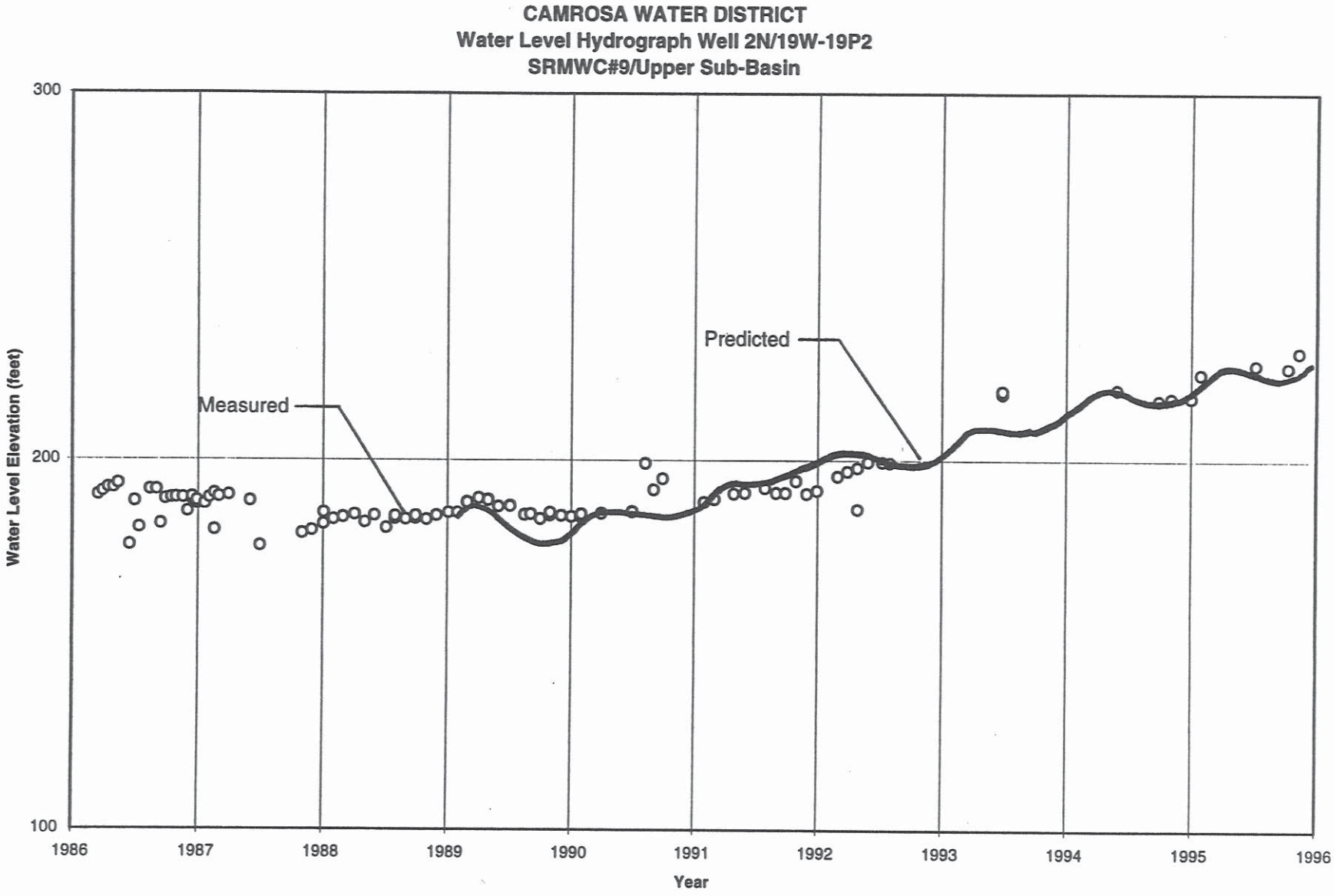


FIGURE 6. CALIBRATION WELL 19P2

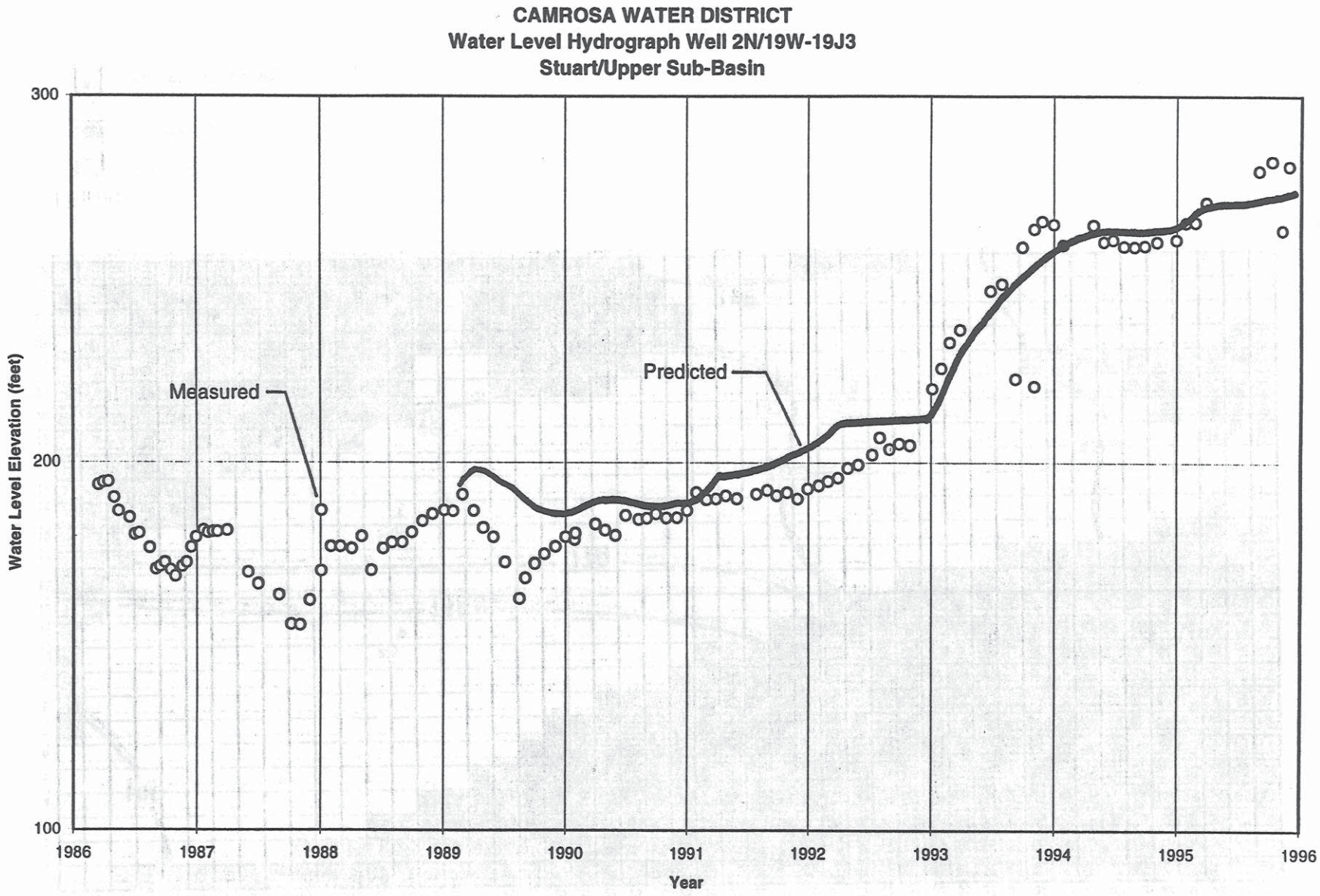


FIGURE 7. CALIBRATION WELL 19J3

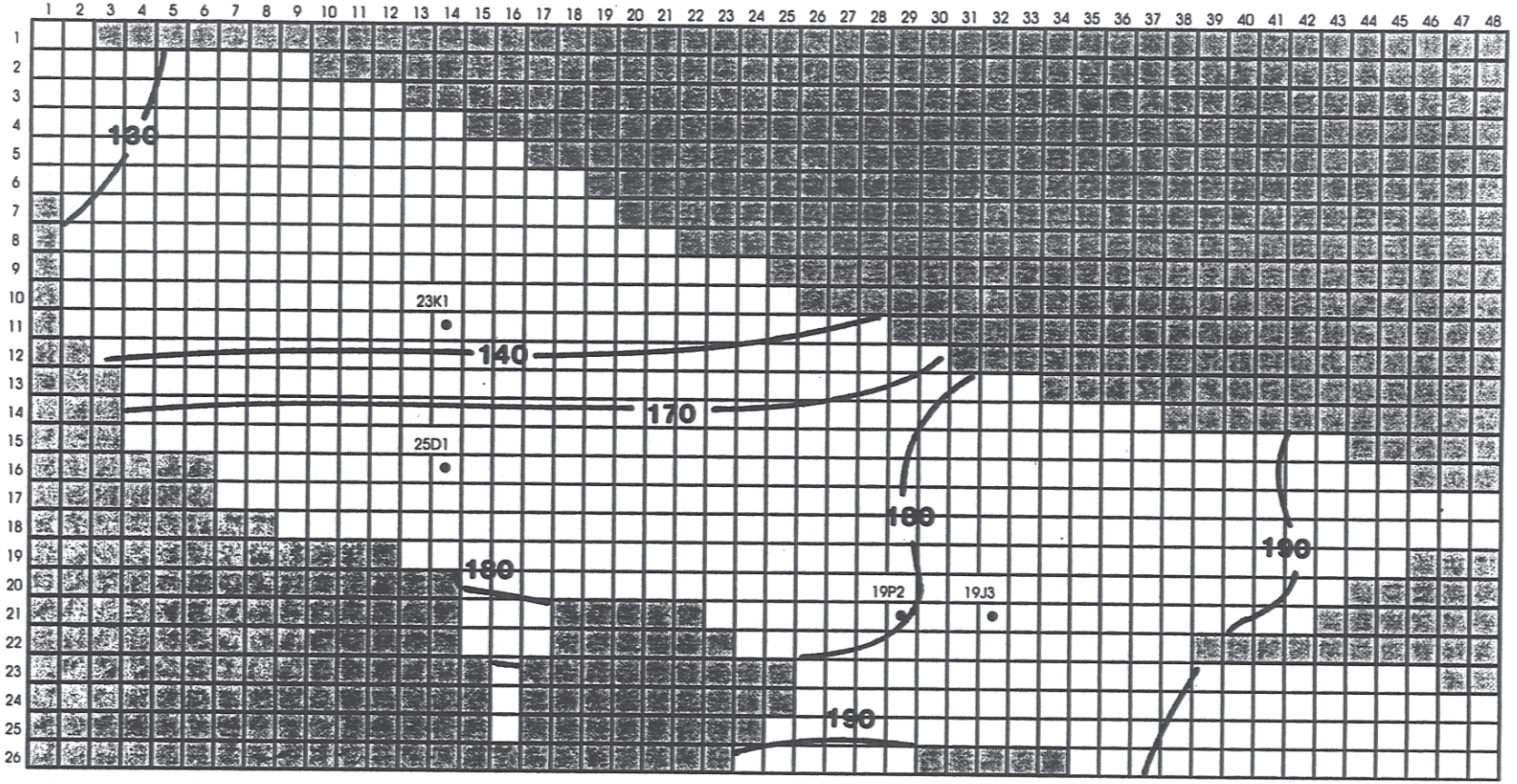


FIGURE 8. PREDICTED ELEVATION OF WATER TABLE, END OF 1989, IN FEET

Santa Rosa Groundwater Basin
Principal Components of Water Budget
(Average Values 1989-1995, Acre-feet/Year)

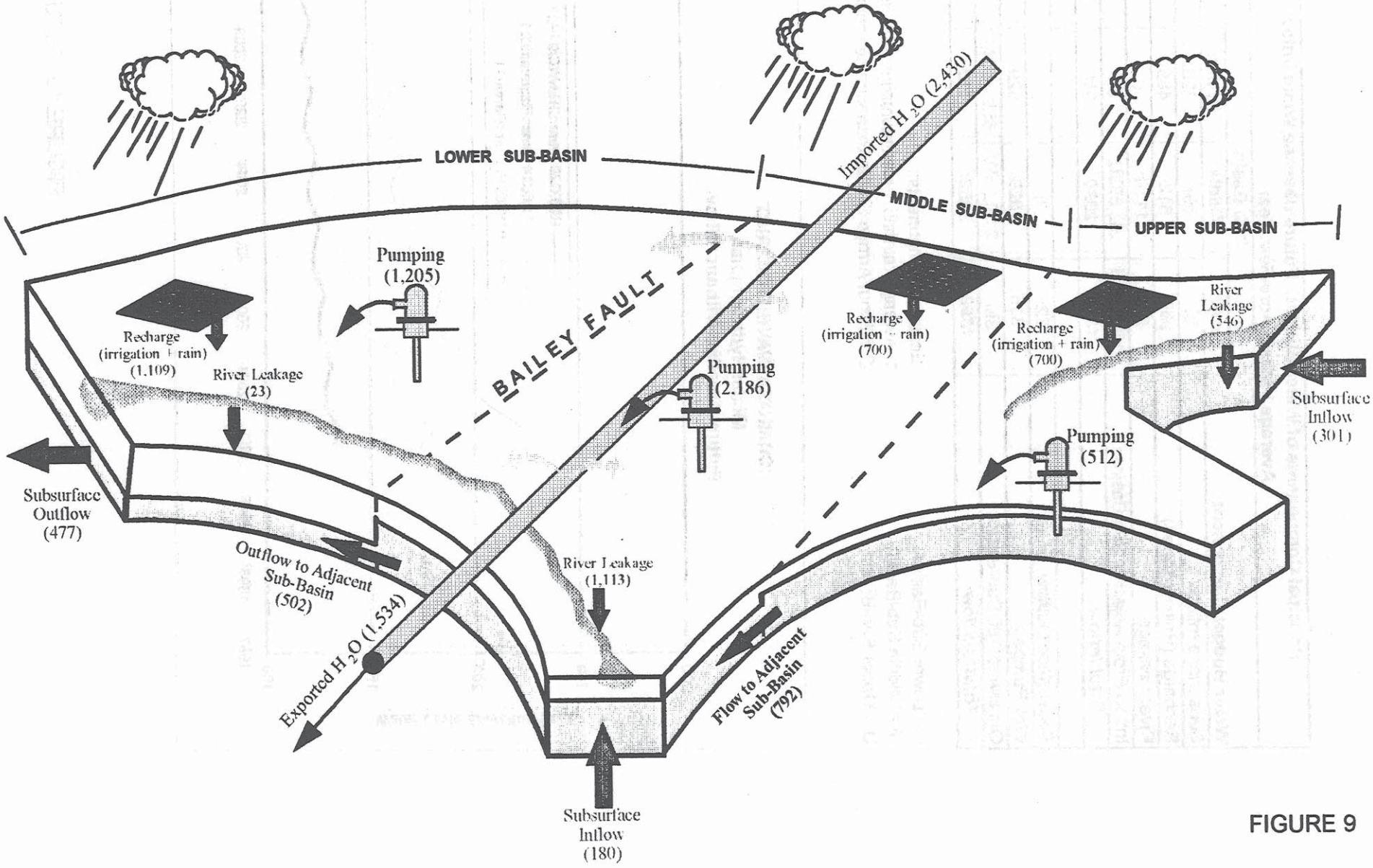


FIGURE 9

Principal Components of Water Budget - Future Baseline W/out Inflow Average Values, Acre-Feet/Year				
	Sub-Basin			
Water Budget Component	**Lower**	**Middle**	**Upper**	**Total**
Subsurface Inflow	89	594	326	1009
Recharge (Rain+ Applied)	966	612	485	2063
River Leakage	23	1118	0	1141
Inflow From Adjacent Sub-Basins	213M; 55U	3L; 603U	5M	879
Total Inflow	***1346***	***2930***	***816***	***5092***
Subsurface Outflow	72	5	2	79
Well Pumping	1315	2829	529	4673
Outflow to Adj. Sub-Basins	3M	213L; 5U	55L; 603M	879
Total Outflow	***1390***	***3052***	***1189***	***5631***

L = Lower Sub-Basin
M = Middle Sub-Basin
U = Upper Sub-Basin

Scenario Components:
1. Average rainfall, recent pumping/water levels
2. Without Arroyo Santa Rosa surface recharge

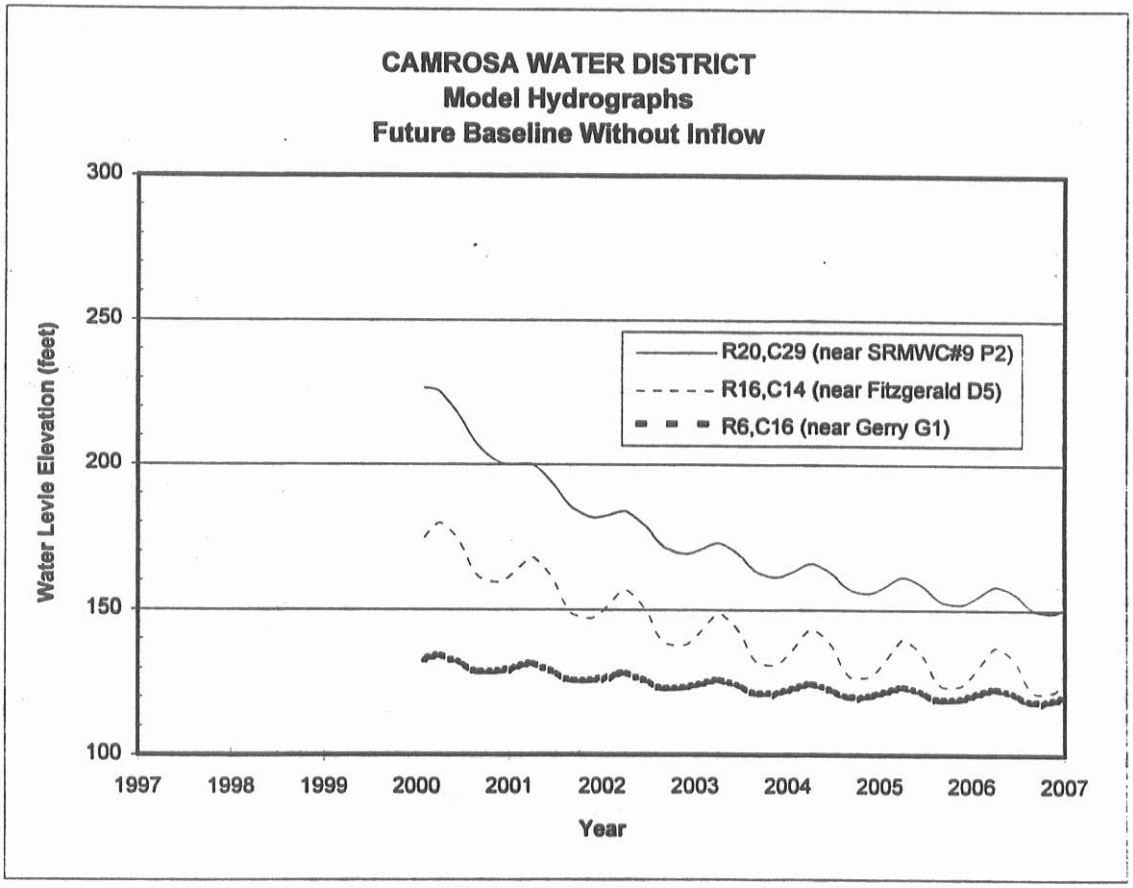


FIGURE 10. FUTURE BASELINE

Principal Components of Water Budget - Pumping Shift to Upper Basin Average Values, Acre-Feet/Year				
	Sub-Basin			
Water Budget Component	Lower	Middle	Upper	Total
Subsurface Inflow	0	18	261	279
Recharge (Rain+ Applied)	966	612	485	2063
River Leakage	23	1118	1634	2775
Inflow From Adjacent Sub-Basins	619M; 93U	1218U	0	1930
Total Inflow	***1701***	***2966***	***2380***	***7047***
Subsurface Outflow	380	88	13	481
Well Pumping	1315	2240	1118	4673
Outflow to Adj. Sub-Basins	0	619L	93L; 1218M	1930
Total Outflow	***1695***	***2947***	***2442***	***7084***

L = Lower Sub-Basin
M = Middle Sub-Basin
U = Upper Sub-Basin

Scenario Components:
1. Average rainfall, recent pumping/water levels
2. With Arroyo Santa Rosa surface recharge
3. Shift 590 afy Middle to Upper Sub-Basin

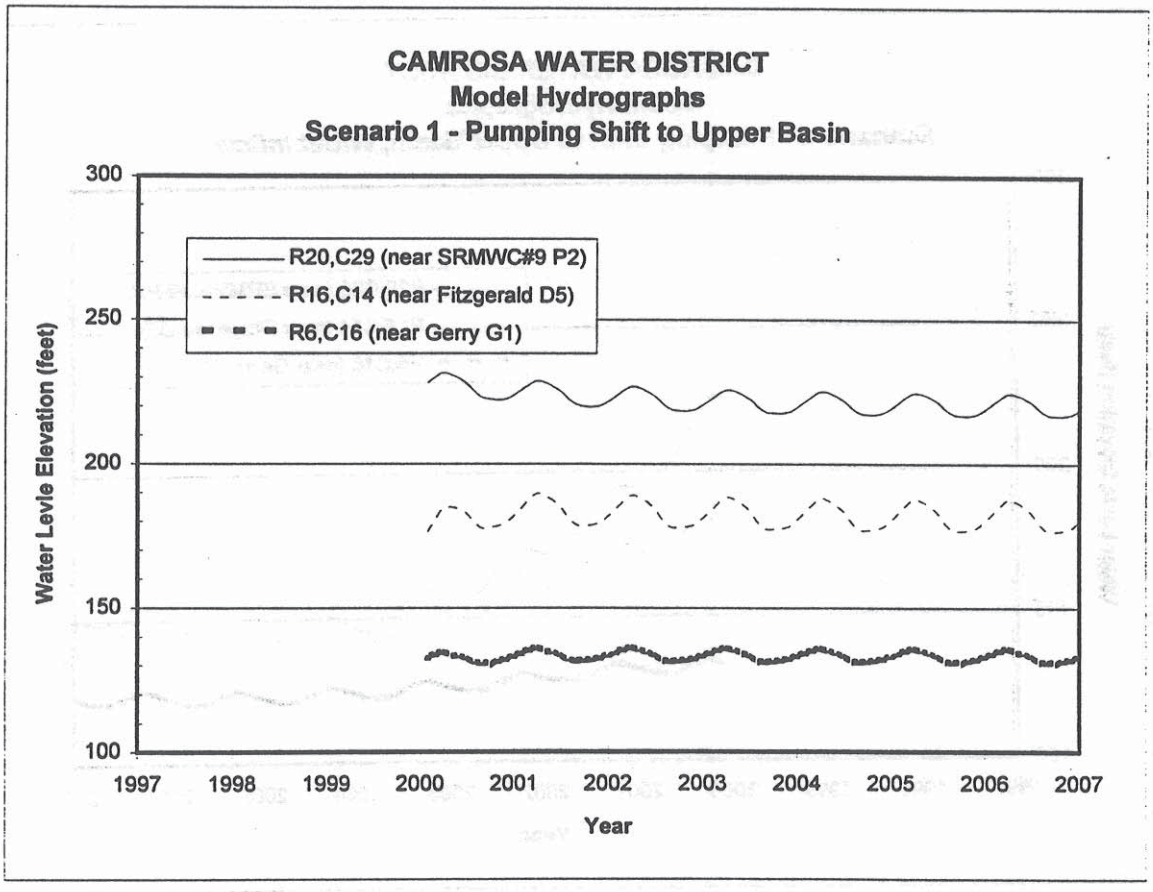


FIGURE 11. SCENARIO 1 - PUMPING SHIFT TO UPPER BASIN

Principal Components of Water Budget - Pumping Shift W/out Inflow Average Values, Acre-Feet/Year				
	Sub-Basin			
Water Budget Component	Lower	Middle	Upper	Total
Subsurface Inflow	44	560	338	942
Recharge (Rain+ Applied)	966	612	473	2051
River Leakage	23	1118	0	1141
Inflow From Adjacent Sub-Basins	309M; 42U	237U	58M	646
Total Inflow	***1384***	***2527***	***869***	***4780***
Subsurface Outflow	103	7	1	111
Well Pumping	1315	2240	963	4518
Outflow to Adj. Sub-Basins	0	481L	42L; 237M	760
Total Outflow	***1418***	***2728***	***1243***	***5389***

L = Lower Sub-Basin
M = Middle Sub-Basin
U = Upper Sub-Basin

Scenario Components:
1. Average rainfall, recent pumping/water levels
2. Without Arroyo Santa Rosa surface recharge
3. Shift 590 afy Middle to Upper Sub-Basin

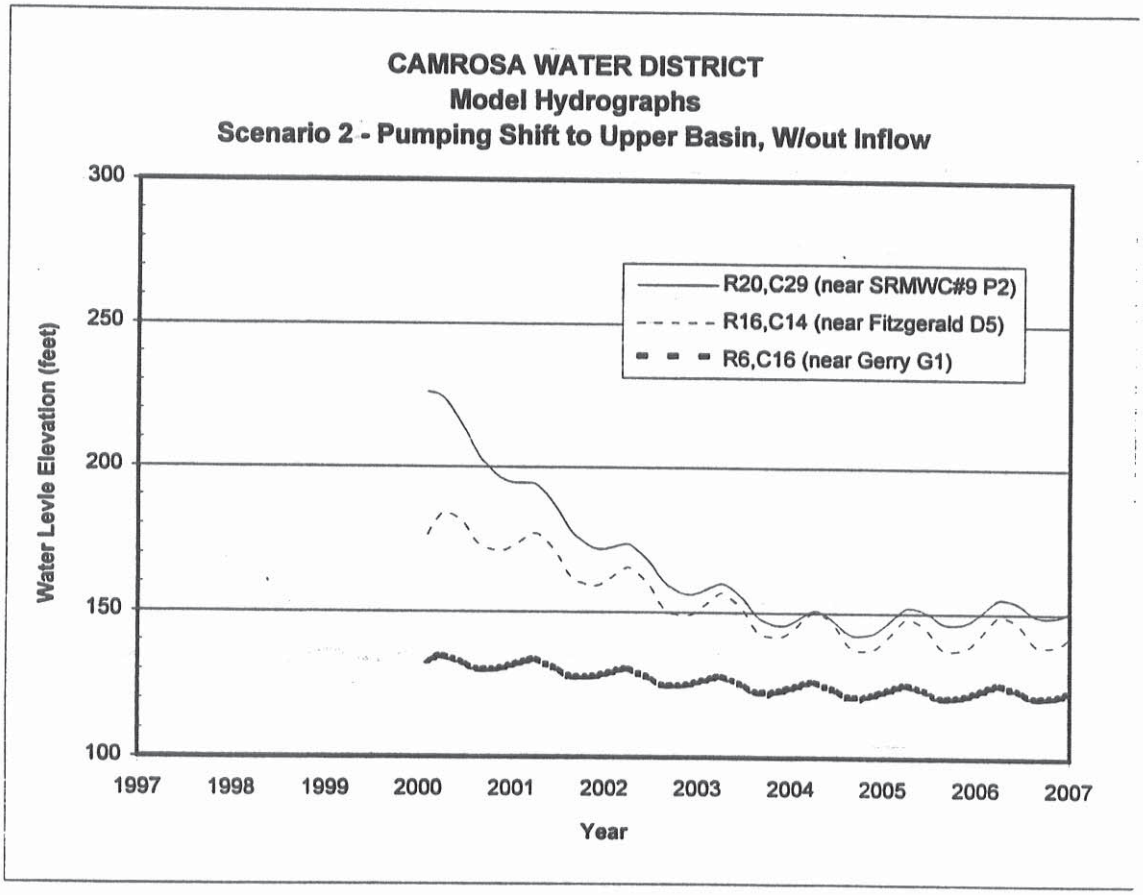


FIGURE 12. SCENARIO 2 - PUMPING SHIFT TO UPPER BASIN W/OUT INFLOW

Principal Components of Water Budget - Future Baseline Average Values, Acre-Feet/Year				
	Sub-Basin			
Water Budget Component	**Lower**	**Middle**	**Upper**	**Total**
Subsurface Inflow	0	31	243	274
Recharge (Rain+ Applied)	966	612	485	2063
River Leakage	23	1118	1634	2775
Inflow From Adjacent Sub-Basins	539M; 108U	1687U	0	2334
Total Inflow	***1636***	***3448***	***2362***	***7446***
Subsurface Outflow	320	76	17	413
Well Pumping	1315	2829	529	4673
Outflow to Adj. Sub-Basins	0	539L	108L; 1687	2334
Total Outflow	***1635***	***3444***	***2341***	***7420***

L = Lower Sub-Basin
M = Middle Sub-Basin
U = Upper Sub-Basin

Scenario Components:
1. Average rainfall, recent pumping/w+N19ater leve
2. With Arroyo Santa Rosa surface recharge

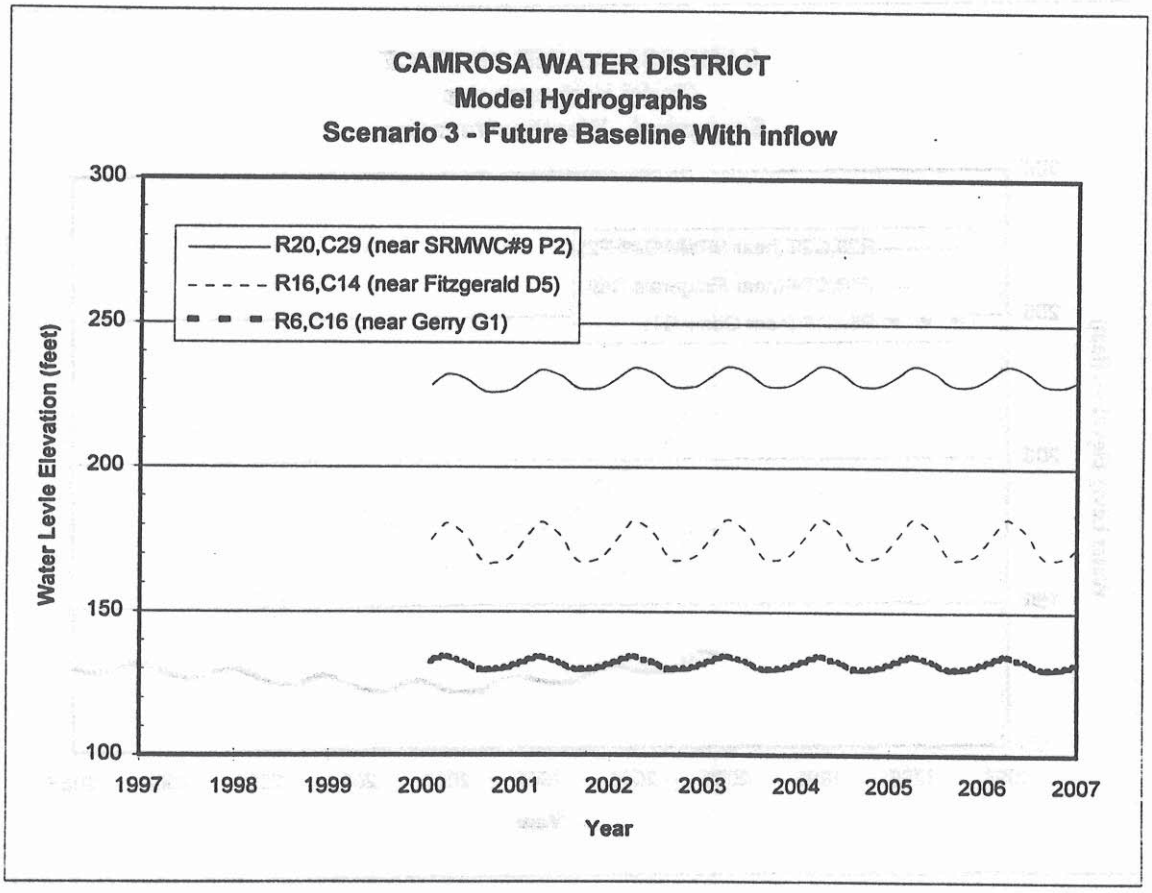


FIGURE 13. SCENARIO 3 - FUTURE BASELINE WITH INFLOW

Principal Components of Water Budget - Weather Variation Average Values, Acre-Feet/Year				
	Sub-Basin			
Water Budget Component	**Lower**	**Middle**	**Upper**	**Total**
Subsurface Inflow	49	339	290	678
Recharge (Rain+ Applied)	910	573	445	1928
River Leakage	23	1118	934	2075
Inflow From Adjacent Sub-Basins	335M;75U	1070U	0	1480
Total Inflow	***1392***	***3100***	***1669***	***6161***
Subsurface Outflow	86	10	6	102
Well Pumping	1315	2829	529	4673
Outflow to Adj. Sub-Basins	0	335L	75L;1070M	1480
Total Outflow	***1401***	***3174***	***1680***	***6255***

L = Lower Sub-Basin
M = Middle Sub-Basin
U = Upper Sub-Basin

Scenario Components:
1. Recent pumping/water levels
2. Years 1-3, 1989 rain; years 4-7, avg. rain
3. Years 1-3, no Arroyo Santa Rosa recharge

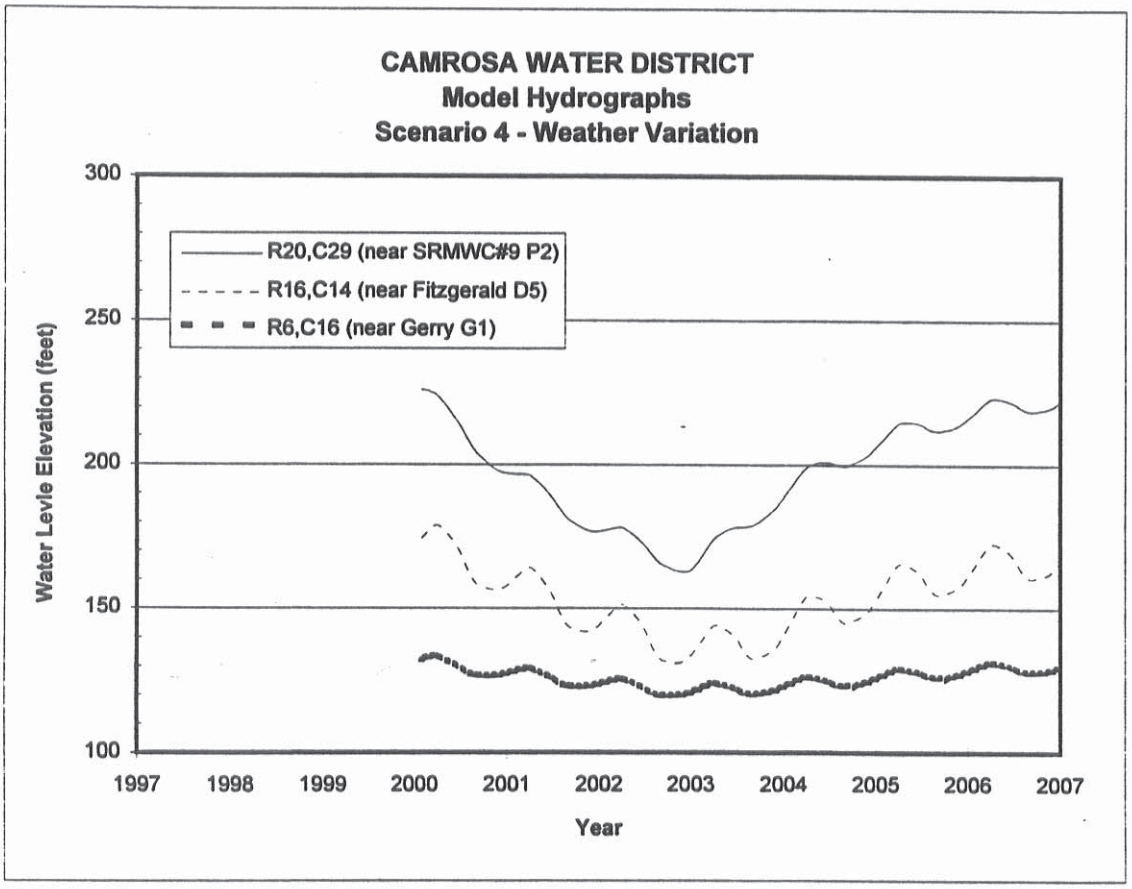


FIGURE 14. SCENARIO 4 - WEATHER VARIATION

Appendix 1

General Well Information

Camrosa Water District
Groundwater Modeling Study
General Well Information

State Well No.	Well Name	Drill Date	Diameter	Depth	Township	Range	Section	Parcel	Well Elev.	Lithology (Y/N)	Water Level Period	Extraction Period
02N/19W-19J01			12	354					301	Y	1989	None
02N/19W-19J03	Stuart				02N	19W	19	J	315	N	1986-93	None
02N/19W-19J04		07/17/51	14	520	2N	19W	19			Y	1951	None
02N/19W-19L01	Jones		14	515	02N	19W	19	L	347	N	1986-88	None
02N/19W-19N01			12	180	02N	19W	19	N	237.9	N	None	None
02N/19W-19N02		11/01/49	12	400					240	Y	None	1993
02N/19W-19P01	SRMWC 7	01/01/28			02N	19W	19	P	276.6	N	1986-89	None
02N/19W-19P02	SRMWC 9	03/29/40	16	393	02N	19W	19	P	280	Y	1986-93	1989-93
02N/19W-19Q01		02/25/29		438	2N	19W	19	Q	265	Y	None	None
02N/19W-19Q02	Nicholson				02N	19W	19	Q	290	N	1986-93	1993
02N/19W-19R01				300	02N	19W	19	R	295.26	N	None	None
02N/19W-19R02		06/01/26	16	380	2N	19W	19	R	291.4	Y	None	None
02N/19W-20K01		08/08/30	16	237	02N	19W	20	K	318.3	Y	None	None
02N/19W-20K02	bogus				02N	19W	20	L		N	None	None
02N/19W-20L01		01/01/28	16	275	02N	19W	20	M	302.5	Y	None	1993
02N/19W-20M01	Snow	01/01/15	16	500	02N	19W	20	M	320.6	Y	1986-93	1982-92
02N/19W-20M03	Ventura Farms	08/01/59	10	300	02N	19W	20	M	322	Y	1986-93	1982-94
02N/19W-20M04	Penny	03/01/62	10	464	02N	19W	20	N	325	Y	1986-93	1982-92
02N/19W-20N01					02N	19W	20	N	305.55	N	None	None
02N/19W-20N02		11/01/51	16	575	02N	19W	21	C	316.22	Y	None	1993
02N/19W-21C01		12/01/29	18	157	02N	19W	21	C	490.8	Y	None	None
02N/19W-21C02		01/01/26	18	411	02N	19W	21	E	489.6	Y	None	None
02N/19W-21E01		11/01/29	18	78	02N	19W	21	E	420	Y	None	None
02N/19W-21E02			12	60	02N	19W	21	F	438	Y	None	None
02N/19W-21F01		08/19/47	12	168						Y	None	None
02N/19W-21F02		04/02/38	10	500	02N	19W	21	H		Y	None	None
02N/19W-21H01	Maulhardt	10/01/50	14	888	02N	19W	21	K	535	Y	1986-93	None
02N/19W-21K01	D. Conner	06/09/87	6	200					600	Y	None	1993
02N/19W-22A01		01/26/39	16	575	02N	20W	22	K		Y	None	None
02N/20W-22J01	Lamb 2	04/01/91	16	915	02N	20W	23	G		Y	None	1989-93

Camrosa Water District
Groundwater Modeling Study
General Well Information

State Well No.	Well Name	Drill Date	Diameter	Depth	Township	Range	Section	Parcel	Well Elev.	Lithology (Y/N)	Water Level Period	Extraction Period
02N/20W-22K02	Lamb (Sasaki)	07/01/53	12	514	02N	20W	23	G	282	Y	1986-93	1989-93
02N/20W-23G01	Gerry *	05/01/48	14	496	02N	20W	23	H	378	Y	1986-93	None
02N/20W-23G02	Gerry 2*	10/01/50	12	560	02N	20W	23	K	310	Y	1987-93	1989-93
02N/20W-23G03	R Gerry	09/01/90	14	900						Y	None	1989-93
02N/20W-23H02	Gerry 3A	03/01/62	14	910	02N	20W	23	Q	320	Y	1986-93	1989-93
02N/20W-23J01	Gerry 4	12/01/91	14	895						Y	None	1990-93
02N/20W-23K01	McCloskey *	11/01/50	12	800					274	Y	1986-93	1989-93
02N/20W-23L03		12/01/51	12	770	2N	19W	19			Y	None	1989-93
02N/20W-23M01	Berkshire Investments	12/09/91	12	563						Y	None	1989-93
02N/20W-23Q01		12/01/43	13		02N	20W	24	E	230	Y	None	None
02N/20W-23Q02	McCloskey 2*								235	Y	1986-93	1993
02N/20W-23Q03		07/01/46		165					226.3	Y	None	None
02N/20W-23Q04		04/10/46		178						Y	None	None
02N/20W-23Q05		08/07/51		813	02N	20W	24	Q		Y	None	None
02N/20W-23R01		06/01/61	15	555	02N	20W	24	R	234.6	Y	None	1993
02N/20W-24E01	Burkett	10/01/50	12	852	02N	20W	24	R	330	Y	None	1989-93
02N/20W-24K01		07/01/30							300	Y	None	None
02N/20W-24P03										Y	None	None
02N/20W-24Q01		10/01/28	16	357	02N	20W	25	C	225.97	Y	None	None
02N/20W-24Q02		05/01/28	14	346					225.5	Y	None	None
02N/20W-24Q03	SRMWC 10	05/01/54	14	360	02N	20W	25	C	235	Y	1986-93	1989-93
02N/20W-24R02	Archdiocese				02N	20W	25	C	240	Y	1986-93	None
02N/20W-24R03	SRMWC 5	10/01/28	16	287					245	Y	1986-93	None
02N/20W-25B01	C.Conner	03/09/92	88	300	02N	20W	25	D	800	Y	None	1993
02N/20W-25C01	Conejo 1		12	325					235	Y	None	1982-94
02N/20W-25C02	Conejo 2	03/17/30	16	399					226	Y	1986-93	1982-94
02N/20W-25C03		10/01/23	14	200	02N	20W	25	D	227.16	Y	None	None
02N/20W-25C04									228	Y	1986-93	None
02N/20W-25C05	Conejo 3	05/01/91	16	260					220	Y	1993	1989-94

Camrosa Water District
Groundwater Modeling Study
General Well Information

State Well No.	Well Name	Drill Date	Diameter	Depth	Township	Range	Section	Parcel	Well Elev.	Lithology (Y/N)	Water Level Period	Extraction Period
02N/20W-25C06	SRMWC 8	09/30/92	14	240					260	Y	None	1989-93
02N/20W-25D01	SRMWC 3	07/01/28	16	460					235	Y	1986-93	1989-93
02N/20W-25D02				510						Y	None	None
02N/20W-25D03		08/01/29	18	219	02N	20W	25	Q	222.87	Y	None	None
02N/20W-25D04	Fitzgerald	01/01/28		190					219.1	Y	1986-93	None
02N/20W-25D05		02/29/64	14	729	02N	20W	26	B	234	Y	None	None
02N/20W-25D06	Goldberg	12/09/91	14	400					230	Y	None	None
02N/20W-25L01		01/01/25	16	173					235.2	Y	None	None
02N/20W-25L02		06/01/29	16	190					234.91	Y	None	None
02N/20W-25P01	Chamberlain 4	11/06/62	12	133					280	Y	None	None
02N/20W-25Q01	Chamberlain 5	11/12/62	11	265					260	Y	1986-93	None
02N/20W-26B01		01/01/30	16						204.7	Y	None	None
02N/20W-26B02	Hernandez	01/24/48	12	392					200	Y	1986-93	1993
02N/20W-26B03		10/01/39	6	300					218	Y	None	None
02N/20W-26C02		07/10/48	12	392					201.63	Y	None	None
02N/20W-26D01		09/15/49		745						Y	None	None
02N/20W-27A01		01/01/24	18	236						Y	None	None
02N/20W-27D01									154	Y	None	None
02N/20W-27D02			18	353						Y	None	None
02N/20W-27D03			14	756						Y	None	None
02N/20W-27D04		01/21/59	12	500						Y	None	None
									Total Wells w/ Records:	***72***	***27***	***29***

Appendix 2

Well Extraction Data

FAX MEMORANDUM

TO: John Murray/Camrosa Water District
Fax no. 987-4797

February 18, 1997

FROM: Jay Spurgin/Boyle Engineering Corporation

TOTAL PAGES 1

SUBJECT: **Santa Rosa Basin Groundwater Model**
Pumping Discretization

The following table presents the discretization of average model period (1989-95) pumping among lower, middle, and upper sub-basins. The lowest pumping for the total basin occurred in 1991 and was 2,594 afy.

Santa Rosa Groundwater Basin
1989-95 Average Pumping Within Sub-Basins (afy)

Sub-Basin	CWD	SRMWC	Other	Total
Lower	0	0	1205	1205
Middle	1718	468	0	2186
Upper	470	42	0	512
Total Basin	2188	510	1205	3903

VT-C13-200-02/jts/jm-memo3.doc

BOYLE
5851 Thille Street, Suite 201, Ventura, CA 93003
805 / 644-9704 FAX 805 / 642-3277

Camrosa Water District
Groundwater Modeling Study
Well Extraction Summary (Acrefeet)

Year	SRMWD 9 021919P2 (21,29)	Snow 021920M1 (21,37)	Ventura Farms 021920M3 (22,36)	Penny 021920M4 (22,36)	Lamb 2 022022J1 (5,6)	Lamb (Sasaki) 022022K2 (4,5)	Gerry 2 022023G2 (8,13)	R Gerry 022023G3 (9,13)	Gerry 3A 022023H2 (9,15)	Gerry 4 022023J1 (11,15)	McCloskey 022023K1 (11,14)	022023L3 (8,11)	Burkett 022024E1 (10,19)	SRMWD 10 022024Q3 (17,20)	Conejo 2 022025C1 (18,19)	Conejo 1 022025C2 (18,19)	Conejo 3 022025C5 (18,19)	SRMWD 8 022025C6 (17,20)	SRMWD 3 022025D1 (16,16)	Annual Percentage
Jan-86	8.3	9.0	3.2	4.4											131.7	51.6		16.1	21.5	6.92%
Feb-86	6.5	4.9	0.3	1.2											106.8	43.1		12.6	16.8	5.41%
Mar-86	8.1	3.9	0.1	1.0											131.2	59.9		15.8	21.1	6.79%
Apr-86	9.2	28.3	1.4	14.4											111.4	64.7		17.8	23.6	7.63%
May-86	10.9	42.6	8.0	22.8											124.0	65.7		21.2	28.2	9.11%
Jun-86	11.5	41.4	6.9	22.2											128.3	77.1		22.3	29.6	9.55%
Jul-86	5.7	44.8	17.9	21.6											119.1	82.7		23.0	18.9	9.91%
Aug-86	5.6	40.6	37.9	17.3											112.1	73.8		22.7	18.6	9.76%
Sep-86	5.7	44.2	18.5	19.1											127.0	80.8		23.3	19.1	10.03%
Oct-86	5.7	43.4	32.8	0.8											129.1	81.9		23.2	19.0	9.97%
Nov-86	4.8	35.8	22.1	0.0											127.5	55.1		19.3	15.9	8.33%
Dec-86	3.8	10.4	5.0	0.0											117.1	57.7		15.3	12.5	6.59%
Subtotal:	*83.8*	*349.3*	*134.1*	*124.8*											*1465.3*	*794.1*		*232.6*	*244.8*	*100.00%*
Jan-87	4.1	27.8	6.0	0.0											134.9	43.2		16.7	13.7	7.18%
Feb-87	3.9	18.5	17.8	0.0											108.7	54.1		15.7	12.9	6.75%
Mar-87	4.5	15.1	9.2	6.6											136.7	64.3		18.3	15.0	7.86%
Apr-87	5.4	38.2	20.0	24.2											121.6	71.9		21.7	17.8	9.35%
May-87	6.0	44.9	24.1	28.3											132.8	79.5		24.4	20.0	10.50%
Jun-87	5.0	44.8	24.0	15.2											112.4	62.0		20.4	16.7	8.76%
Jul-87	6.0	39.9	22.7	26.0											120.7	67.5		22.6	18.4	9.39%
Aug-87	6.1	38.0	27.7	23.9											126.6	67.3		23.2	18.8	9.61%
Sep-87	5.6	39.4	24.7	25.6											110.6	60.5		21.3	17.3	8.84%
Oct-87	5.3	33.6	12.5	22.2											114.8	64.4		20.2	16.4	8.39%
Nov-87	4.7	24.3	14.0	11.1											120.6	47.0		17.8	14.4	7.36%
Dec-87	3.8	0.0	13.5	0.0											117.9	45.5		14.5	11.7	6.00%
Subtotal:	*60.3*	*364.5*	*216.2*	*183.1*											*1458.3*	*727.2*		*236.7*	*193.0*	*100.00%*
Jan-88	5.8	0.0	17.9	0.0											114.8	43.6		22.1	17.9	9.15%
Feb-88	7.1	0.0	27.6	0.0											123.7	65.4		27.1	22.0	11.25%
Mar-88	6.7	0.0	29.4	0.0											116.1	57.9		25.5	20.6	10.56%
Apr-88	5.0	0.0	31.4	0.0											75.0	46.8		19.2	15.5	7.95%
May-88	8.2	37.6	27.6	24.5											154.4	5.4		31.2	25.3	12.95%
Jun-88	4.6	4.0	24.1	9.2											102.7	0.1		17.5	14.2	7.27%
Jul-88	4.9	2.7	19.5	0.6											114.5	0.0		18.6	14.8	7.13%
Aug-88	5.4	5.9	25.9	0.1											119.4	0.0		20.5	16.4	7.85%
Sep-88	4.6	0.0	25.5	0.0											102.0	0.0		17.3	13.8	6.62%
Oct-88	4.1	0.0	17.8	0.0											95.7	0.0		15.4	12.3	5.89%
Nov-88	4.7	0.0	23.3	0.0											107.4	0.0		17.7	14.1	6.78%
Dec-88	4.6	0.0	26.2	0.0											101.2	0.0		17.3	13.8	6.61%
Subtotal:	*65.8*	*50.2*	*296.2*	*34.4*											*1326.9*	*219.2*		*249.5*	*200.7*	*100.00%*

Camrosa Water District
Groundwater Modeling Study
Well Extraction Summary (Acrefeet)

Year	SRMWD 9 021919P2 (21,29)	Snow 021920M1 (21,37)	Ventura Farms 021920M3 (22,36)	Penny 021920M4 (22,36)	Lamb 2 022022J1 (5,6)	Lamb (Sasaki) 022022K2 (4,5)	Gerry 2 022023G2 (8,13)	R Gerry 022023G3 (9,13)	Gerry 3A 022023H2 (9,15)	Gerry 4 022023J1 (11,15)	McCloskey 022023K1 (11,14)	022023L3 (8,11)	Burkett 022024E1 (10,19)	SRMWD 10 022024Q3 (17,20)	Conejo 2 022025C1 (18,19)	Conejo 1 022025C2 (18,19)	Conejo 3 022025C5 (18,19)	SRMWD 8 022025C6 (17,20)	SRMWD 3 022025D1 (16,16)	Annual Percentage
Jan-89		0.1	29.4	0.1		4.1	10.0		11.9		5.7	27.9	20.7		88.0	0.0		16.1	12.8	6.15%
Feb-89		0.0	17.6	0.0		2.7	6.7		7.9		3.8	18.6	13.8		60.9	0.0		10.7	8.6	4.11%
Mar-89		24.3	10.9	16.5		5.8	14.1		16.8		8.1	39.5	29.4		115.0	0.0		22.8	18.2	8.72%
Apr-89		26.2	38.9	17.8		6.7	16.5		19.6		9.4	46.1	34.3		111.6	0.0		26.6	21.2	10.17%
May-89		8.4	36.3	22.4		5.6	13.8		16.4		7.9	38.5	28.7		95.5	0.0		22.2	17.7	8.51%
Jun-89		38.0	35.0	24.1		7.1	17.4		20.8		10.0	48.7	36.2		108.5	0.0		28.1	22.4	10.76%
Jul-89		49.4	29.8	25.0		7.6	18.6		22.1		10.6	52.0	38.7		115.1	0.0		25.0	21.6	11.47%
Aug-89		34.8	34.8	20.1		7.0	17.2		20.5		9.9	48.2	35.9		113.7	0.0		23.2	20.0	10.64%
Sep-89		0.0	33.4	0.0		4.3	10.5		12.5		6.0	29.3	21.8		90.2	0.0		14.1	12.2	6.47%
Oct-89		0.0	41.3	0.0		5.2	12.8		15.3		7.3	35.9	26.7		110.1	0.0		17.3	14.9	7.92%
Nov-89		0.0	31.1	0.0		3.8	9.4		11.2		5.4	26.4	19.6		80.3	0.0		12.7	11.0	5.83%
Dec-89		0.0	47.6	0.0		6.1	15.0		17.9		8.6	41.9	31.2		129.4	0.0		20.2	17.4	9.26%
Subtotal:		*181.2*	*386.1*	*126.0*		*66.0*	*162.0*		*193.0*		*92.8*	*453.0*	*337.0*		*1218.3*	*0.0*		*239.1*	*198.0*	*100.00%*
Jan-90			37.0			5.7	12.6		16.8		5.0	21.2	32.5		89.0	0.0		16.9	14.6	7.75%
Feb-90			33.7			6.0	13.4		17.8		5.3	22.4	34.4		99.9	0.0		17.9	15.5	8.21%
Mar-90			73.7			13.1	28.9		38.4		11.4	48.5	74.3		214.9	0.0		38.7	33.4	17.74%
Apr-90			32.3			5.7	12.7		16.9		5.0	21.3	32.7		94.7	0.0		17.0	14.7	7.81%
May-90			35.5			6.3	13.9		18.4		5.4	23.2	35.6		102.7	0.0		18.5	16.0	8.50%
Jun-90			33.0			5.7	12.5		16.6		4.9	21.0	32.2		92.0	0.0		16.8	14.5	7.68%
Jul-90			37.1			5.9	13.0		17.3		5.1	21.8	33.4		60.3	32.4		17.6	15.3	7.98%
Aug-90			38.9			4.7	10.4		13.8		4.1	17.4	26.7		42.1	22.7		14.0	12.2	6.37%
Sep-90			77.1			7.2	15.9		21.1		6.2	26.6	40.9		53.0	28.5		21.5	18.7	9.75%
Oct-90			38.5			3.8	8.5		11.2		3.3	14.2	21.8		29.9	16.1		11.4	10.0	5.19%
Nov-90			38.5			4.9	10.9		14.4		4.3	18.2	28.0		45.6	24.5		14.7	12.8	6.68%
Dec-90			38.0			4.7	10.3		13.7		4.1	17.3	26.6		42.3	22.8		14.0	12.2	6.34%
Subtotal:			*513.3*			*73.6*	*163.2*		*216.4*		*64.0*	*273.3*	*419.0*		*966.4*	*147.0*		*218.9*	*190.0*	*100.00%*
Jan-91			37.3			3.9	7.9	4.1	11.9	1.3	6.2	12.5	17.8		45.5	24.5	7.8	8.2	10.7	7.97%
Feb-91			31.8			3.5	7.0	3.6	10.5	1.2	5.5	11.1	15.7		41.1	22.1	6.9	10.7	15.5	7.06%
Mar-91			24.6			3.7	7.5	3.9	11.2	1.2	5.9	11.8	16.8		49.9	26.9	7.4	2.8	4.3	7.53%
Apr-91			26.7			4.0	8.0	4.1	12.0	1.3	6.3	12.6	18.0		53.1	28.6	7.9	9.6	15.0	8.05%
May-91			36.7			3.8	7.6	3.9	11.5	1.3	6.0	12.0	17.1		43.3	23.3	7.5	18.2	29.2	7.67%
Jun-91			36.3			4.9	9.9	5.1	14.9	1.7	7.8	15.6	22.2		63.7	34.3	9.8	14.0	21.7	9.98%
Jul-91			31.1			3.1	6.2	3.2	9.3	1.0	4.9	9.8	13.9		31.0	16.7	6.1	20.3	31.3	6.23%
Aug-91			33.0			3.2	6.5	3.4	9.9	1.1	5.1	10.3	14.7		38.8	20.9	6.5	18.2	27.7	6.60%
Sep-91			50.6			5.0	10.0	5.2	15.1	1.7	7.9	15.9	22.6		60.9	32.8	10.0	21.0	31.8	10.13%
Oct-91			48.7			4.8	9.7	5.0	14.6	1.6	7.6	15.3	21.8		57.9	31.2	9.6	18.5	28.6	9.76%
Nov-91			42.7			4.2	8.5	4.4	12.8	1.4	6.7	13.4	19.1		48.3	26.0	8.4	16.5	21.1	8.55%
Dec-91			52.2			5.1	10.3	5.4	15.6	1.7	8.2	16.4	23.3		67.5	36.3	10.3	10.8	19.3	10.45%
Subtotal:			*451.7*			*49.2*	*99.0*	*51.3*	*149.3*	*16.6*	*78.0*	*156.8*	*223.0*		*601.0*	*323.6*	*98.3*	*168.9*	*256.3*	*100.00%*

Camrosa Water District
Groundwater Modeling Study
Well Extraction Summary (Acrefeet)

Year	SRMWD 9 021919P2 (21,29)	Snow 021920M1 (21,37)	Ventura Farms 021920M3 (22,36)	Penny 021920M4 (22,36)	Lamb 2 022022J1 (5,6)	Lamb (Sasaki) 022022K2 (4,5)	Gerry 2 022023G2 (8,13)	R Gerry 022023G3 (9,13)	Gerry 3A 022023H2 (9,15)	Gerry 4 022023J1 (11,15)	McCloskey 022023K1 (11,14)	022023L3 (8,11)	Burkett 022024E1 (10,19)	SRMWD 10 022024Q3 (17,20)	Conejo 2 022025C1 (18,19)	Conejo 1 022025C2 (18,19)	Conejo 3 022025C5 (18,19)	SRMWD 8 022025C6 (17,20)	SRMWD 3 022025D1 (16,16)	Annual Percentage
Jan-92			34.7		15.1	2.3		10.7	11.3	19.3	5.1	7.5	15.4		66.3	35.7	0.0	9.4	8.6	6.95%
Feb-92			35.6		15.5	2.3		11.0	11.6	19.8	5.2	7.7	15.8		56.7	30.5	0.0	5.7	3.7	7.13%
Mar-92			39.0		17.0	2.5		12.1	12.7	21.7	5.7	8.4	17.3		60.6	32.6	0.0	2.9	3.6	7.81%
Apr-92			35.5		15.4	2.3		11.0	11.5	19.8	5.2	7.7	15.8		63.9	34.4	0.0	8.7	14.4	7.11%
May-92			37.7		16.4	2.4		11.6	12.2	21.0	5.5	8.2	16.7		61.8	33.3	0.0	14.2	24.6	7.54%
Jun-92			31.7		13.8	2.1		9.8	10.3	17.7	4.6	6.9	14.1		51.9	27.9	0.0	16.5	31.3	6.35%
Jul-92			16.9		15.5	2.3		11.0	11.6	19.8	5.2	7.7	15.8		53.9	29.0	0.0	20.6	41.4	7.13%
Aug-92	5.8		26.2		24.0	3.6		17.1	17.9	30.7	8.1	12.0	24.6		76.8	39.3	35.5	24.2	39.7	11.06%
Sep-92	3.3		26.2		24.0	3.6		17.1	17.9	30.7	8.1	12.0	24.6		76.8	39.3	35.5	8.3	48.0	11.06%
Oct-92	6.0		26.2		24.0	3.6		17.1	17.9	30.7	8.1	12.0	24.6		76.8	39.3	35.5	0.0	33.8	11.06%
Nov-92	6.4		26.2		24.0	3.6		17.1	17.9	30.7	8.1	12.0	24.6		76.8	39.3	35.5	29.4	7.5	11.06%
Dec-92	1.1		13.6		12.5	1.9		8.9	9.3	15.9	4.2	6.2	12.7		80.6	15.7	3.8	1.1	21.3	5.74%
Subtotal:	*22.7*		*349.7*		*217.3*	*32.4*		*154.4*	*162.3*	*278.0*	*72.9*	*108.2*	*222.1*		*802.9*	*396.3*	*145.8*	*141.1*	*278.1*	*100.00%*
Jan-93	0.8		6.7		6.3	1.3		5.3	4.5	9.0	1.9	3.3	7.2	0.0	71.0	1.3	0.8	8.3	1.5	2.81%
Feb-93	0.0		6.6		6.3	1.3		5.3	4.5	9.0	1.9	3.3	7.2	0.0	73.0	0.0	0.0	3.1	0.0	2.80%
Mar-93	2.2		10.8		10.2	2.2		8.6	7.3	14.6	3.2	5.4	11.7	3.6	73.0	10.0	1.0	6.4	7.8	4.57%
Apr-93	5.7		15.9		15.0	3.2		12.6	10.8	21.5	4.6	7.9	17.2	15.5	83.4	35.0	23.2	29.6	4.0	6.71%
May-93	4.3		26.9		25.4	5.4		21.2	18.2	36.3	7.8	13.3	29.1	0.0	79.8	52.0	128.4	36.5	12.2	11.32%
Jun-93	4.5		23.3		22.0	4.7		18.4	15.8	31.5	6.8	11.5	25.3	0.0	74.4	50.1	102.7	43.3	11.4	9.83%
Jul-93	8.1		34.2		25.2	5.3		21.1	18.1	36.1	7.8	13.2	29.0	28.5	80.3	43.5	139.3	49.8	13.1	11.27%
Aug-93	5.6		35.1		25.9	5.5		21.7	18.6	37.1	8.0	13.6	29.7	3.9	85.3	43.5	142.1	51.7	18.1	11.57%
Sep-93	10.9		32.0		23.6	5.0		19.8	16.9	33.8	7.3	12.4	27.1	16.2	67.5	43.5	133.0	46.4	16.0	10.54%
Oct-93	9.0		32.1		23.7	5.0		19.8	17.0	33.9	7.3	12.4	27.2	8.7	59.7	48.9	136.5	30.4	11.9	10.58%
Nov-93	6.2		25.9		19.1	4.0		16.0	13.7	27.3	5.9	10.0	21.9	3.6	50.1	23.1	118.4	25.6	11.0	8.53%
Dec-93	4.0		28.8		21.2	4.5		17.8	15.2	30.4	6.6	11.1	24.4	0.0	56.2	37.5	122.9	25.9	9.6	9.49%
Subtotal:	*61.6*		*278.2*		*223.9*	*47.4*		*187.6*	*160.5*	*320.6*	*69.2*	*117.4*	*237.0*	*80.0*	*853.7*	*388.4*	*1048.3*	*350.1*	*116.8*	*100.00%*
Jan-94	4.0		30.6		18.2	2.7		12.9	13.6	23.3	6.1	9.1	18.6	0.0	58.4	38.9	116.2	24.5	0.0	8.37%
Feb-94	1.4		42.7		13.9	2.1		9.9	10.4	17.8	4.7	6.9	14.2	0.0	48.2	11.9	83.4	8.0	0.0	6.39%
Mar-94	2.7		40.5		11.9	1.8		8.5	8.9	15.2	4.0	5.9	12.2	8.8	42.8	7.6	68.7	9.4	8.8	5.47%
Apr-94	5.2		40.0		18.1	2.7		12.8	13.5	23.1	6.1	9.0	18.5	5.3	57.8	24.5	120.3	16.8	5.3	8.32%
May-94	6.6		32.9		18.7	2.8		13.3	14.0	24.0	6.3	9.3	19.1	8.3	79.7	14.8	123.8	24.1	8.3	8.62%
Jun-94	10.0		32.9		18.7	2.8		13.3	14.0	24.0	6.3	9.3	19.1	13.9	79.7	14.8	123.8	37.7	13.9	8.62%
Jul-94	10.5		43.7		21.5	3.2		15.3	16.1	27.6	7.2	10.7	22.0	17.2	81.1	32.2	132.1	47.5	17.2	9.92%
Aug-94	14.6		38.8		20.8	3.1		14.8	15.5	26.6	7.0	10.4	21.3	0.0	77.4	35.9	127.2	43.3	0.0	9.58%
Sep-94	11.4		38.2		21.6	3.2		15.4	16.1	27.7	7.2	10.8	22.1	0.0	79.3	41.8	130.7	33.8	0.0	9.95%
Oct-94	10.1		42.1		19.7	2.9		14.0	14.7	25.3	6.6	9.8	20.2	4.7	68.8	22.5	131.5	26.8	4.8	9.09%
Nov-94	5.5		39.6		15.9	2.4		11.3	11.9	20.3	5.3	7.9	16.2	7.5	65.5	21.9	95.3	21.6	7.5	7.32%
Dec-94	4.7		44.6		18.2	2.7		12.9	13.6	23.3	6.1	9.1	18.6	3.3	64.7	26.4	108.4	14.4	3.3	8.37%
Subtotal:	*86.8*		*466.6*		*217.3*	*32.4*		*154.4*	*162.3*	*278.0*	*72.9*	*108.2*	*222.1*	*69.0*	*803.4*	*293.2*	*1361.4*	*308.0*	*69.0*	*100.00%*

Camrosa Water District
Groundwater Modeling Study
Well Extraction Summary (Acrefeet)

Year	SRMWD 9 021919P2 (21,29)	Snow 021920M1 (21,37)	Ventura Farms 021920M3 (22,36)	Penny 021920M4 (22,36)	Lamb 2 022022J1 (5,6)	Lamb (Sasaki) 022022K2 (4,5)	Gerry 2 022023G2 (8,13)	R Gerry 022023G3 (9,13)	Gerry 3A 022023H2 (9,15)	Gerry 4 022023J1 (11,15)	McCloskey 022023K1 (11,14)	022023L3 (8,11)	Burkett 022024E1 (10,19)	SRMWD 10 022024Q3 (17,20)	Conejo 2 022025C1 (18,19)	Conejo 1 022025C2 (18,19)	Conejo 3 022025C5 (18,19)	SRMWD 8 022025C6 (17,20)	SRMWD 3 022025D1 (16,16)	Annual Percentage
Jan-95	0.1		35.8		10.2	2.1		8.5	7.3	14.5	3.1	5.3	11.7	1.3	28.9	10.2	44.4	3.5	3.0	4.53%
Feb-95	2.5		34.6		13.4	2.8		11.2	9.6	19.2	4.1	7.0	15.4	1.9	45.2	12.1	65.8	7.4	1.9	5.99%
Mar-95	1.4		38.3		12.7	2.7		10.6	9.1	18.1	3.9	6.6	14.6	0.0	45.2	0.0	65.5	6.4	1.4	5.66%
Apr-95	8.0		37.9		23.5	5.0		19.7	16.8	33.7	7.3	12.3	27.0	3.2	101.1	0.0	137.3	18.6	4.9	10.50%
May-95	10.0		35.8		19.4	4.1		16.3	13.9	27.8	6.0	10.2	22.3	11.6	59.7	0.0	132.6	26.6	6.7	8.67%
Jun-95	13.0		34.9		19.9	4.2		16.7	14.3	28.5	6.2	10.4	22.9	26.6	64.7	0.0	134.7	29.8	7.1	8.90%
Jul-95	23.2		33.1		22.6	4.8		18.9	16.2	32.4	7.0	11.8	25.9	52.9	97.2	0.0	135.4	41.4	13.6	10.09%
Aug-95	19.3		31.0		22.9	4.8		19.1	16.4	32.7	7.1	12.0	26.2	8.7	96.8	0.0	140.8	45.2	15.2	10.20%
Sep-95	17.7		28.1		21.6	4.6		18.1	15.5	30.9	6.7	11.3	24.8	17.9	91.9	0.0	134.0	43.2	12.9	9.65%
Oct-95	16.3		19.1		20.7	4.4		17.3	14.8	29.6	6.4	10.8	23.7	15.5	88.8	0.0	135.2	30.9	6.5	9.24%
Nov-95	8.9		22.8		19.7	4.2		16.5	14.1	28.2	6.1	10.3	22.6	0.0	78.8	0.0	139.8	19.0	0.2	8.79%
Dec-95	4.5		29.2		17.4	3.7		14.6	12.5	24.9	5.4	9.1	20.0	0.0	69.4	0.0	106.0	14.3	0.3	7.77%
Subtotal:	*124.9*		*380.6*		*223.9*	*47.4*		*187.6*	*160.5*	*320.6*	*69.2*	*117.4*	*257.0*	*139.5*	*867.7*	*22.3*	*1371.5*	*286.3*	*73.5*	*100.00%*
Jan-96	3.8		28.7		10.2	2.1		8.5	7.3	14.5	3.1	5.3	11.7	11.8	38.2	0.0	104.5	15.2	2.4	4.53%
Feb-96	1.6		26.6		13.4	2.8		11.2	9.6	19.2	4.1	7.0	15.4	17.4	0.0	0.0	121.8	6.4	1.1	5.99%
Mar-96	2.5		28.6		12.7	2.7		10.6	9.1	18.1	3.9	6.6	14.6	5.5	0.0	0.0	143.1	10.3	1.6	5.66%
Apr-96	12.7		24.5		23.5	5.0		19.7	16.8	33.7	7.3	12.3	27.0	9.1	0.0	0.0	140.6	35.8	8.2	10.50%
May-96	13.9		27.7		19.4	4.1		16.3	13.9	27.8	6.0	10.2	22.3	15.0	0.0	0.0	130.4	39.9	9.5	8.67%
Jun-96	17.4		25.0		19.9	4.2		16.7	14.3	28.5	6.2	10.4	22.9	40.9	0.0	0.0	131.7	53.1	15.3	8.90%
Jul-96	20.4		25.3		22.6	4.8		18.9	16.2	32.4	7.0	11.8	25.9	29.3	0.0	0.0	131.3	49.7	17.7	10.09%
Subtotal:	*72.2*		*186.4*		*223.9*	*47.4*		*187.6*	*160.5*	*320.6*	*69.2*	*117.4*	*257.0*	*129.1*	*38.2*	*0.0*	*903.4*	*210.3*	*55.8*	*54.34%*

Note: Annual Percentage is based on the Conejo, Ventura Farms, Snow, and Penny Well Extraction Totals.
For January 1994 through July 1996, extractions from wells other than Camrosa and Santa Rosa were assumed to be equal to the previous years (1992 and 1993).

Appendix 3

Streamflow, HCWWTP Discharge, & Precipitation Data

Camrosa Water District
Groundwater Modeling Study

Year	Streamflow (cfs)	Hill Canyon WWTP (cfs)	Precipitation (in)
Jan-86	1,523	14.5	4.13
Feb-86	3,039	14.1	5.62
Mar-86	2,715	16.3	6.08
Apr-86	861	15.6	0.90
May-86	660	14.5	0.00
Jun-86	564	14.6	0.00
Jul-86	520	14.5	0.00
Aug-86	497	14.5	0.00
Sep-86	602	15.2	0.80
Oct-86	514	15.0	0.00
Nov-86	973	14.3	1.90
Dec-86	449	16.4	0.26
Subtotal:	*12,917*	*179.5*	*19.69*
Jan-87	795	15.4	1.60
Feb-87	631	14.0	1.17
Mar-87	657	15.3	1.74
Apr-87	481	14.4	0.00
May-87	464	15.1	0.00
Jun-87	422	15.0	0.00
Jul-87	439	15.3	0.00
Aug-87	465	15.2	0.00
Sep-87	403	14.4	0.00
Oct-87	1,190	15.1	1.39
Nov-87	793	14.8	2.28
Dec-87	1,756	15.7	1.39
Subtotal:	*8,496*	*179.6*	*9.57*
Jan-88	1,371	15.3	2.36
Feb-88	965	14.9	1.76
Mar-88	643	15.6	0.29
Apr-88	854	15.2	1.63
May-88	461	15.3	0.00
Jun-88	470	14.9	0.00
Jul-88	442	14.9	0.00
Aug-88	418	15.5	0.00
Sep-88	490	15.1	0.02
Oct-88	516	15.4	0.00
Nov-88	494	14.9	1.33
Dec-88	1,453	15.8	4.15
Subtotal:	*8,577*	*182.9*	*11.54*
Jan-89	673	15.8	0.42
Feb-89	1,278	14.2	4.96
Mar-89	747	15.7	0.97
Apr-89	521	15.1	0.34
May-89	504	16.0	0.17
Jun-89	486	14.4	0.00
Jul-89	464	15.0	0.00
Aug-89	502	15.2	0.00
Sep-89	557	15.4	0.09
Oct-89	639	16.1	0.43
Nov-89	541	15.3	0.47
Dec-89	542	15.2	0.00
Subtotal:	*7,454*	*183.5*	*7.85*

Year	Streamflow (cfs)	Hill Canyon WWTP (cfs)	Precipitation (in)
Jan-90	1,337	14.9	4.29
Feb-90	803	13.3	3.10
Mar-90	448	14.7	0.03
Apr-90	460	13.6	0.18
May-90	426	13.8	1.03
Jun-90	374	13.3	0.03
Jul-90	358	13.5	0.00
Aug-90	379	13.3	0.00
Sep-90	352	13.2	0.02
Oct-90	408	13.6	0.00
Nov-90	535	13.3	0.40
Dec-90	478	13.7	0.04
Subtotal:	*6,357*	*164.2*	*9.12*
Jan-91	563	13.7	2.11
Feb-91	1,017	11.7	4.20
Mar-91	3,564	13.5	18.24
Apr-91	538	12.2	0.01
May-91	381	12.2	0.00
Jun-91	365	11.7	0.14
Jul-91	329	11.8	0.00
Aug-91	319	11.7	0.00
Sep-91	358	11.5	0.00
Oct-91	430	11.6	0.67
Nov-91	307	11.4	0.23
Dec-91	2,028	12.3	5.09
Subtotal:	*10,198*	*145.2*	*30.69*
Jan-92	1,310	12.9	3.42
Feb-92	9,662	15.3	13.77
Mar-92	4,560	15.8	5.26
Apr-92	958	13.9	0.04
May-92	727	13.6	0.49
Jun-92	650	13.1	0.00
Jul-92	486	13.3	0.57
Aug-92	489	13.1	0.00
Sep-92	472	12.7	0.00
Oct-92	662	13.2	1.67
Nov-92	496	12.8	0.00
Dec-92	1,887	13.6	7.46
Subtotal:	*22,359*	*163.3*	*32.68*
Jan-93	9,412	17.3	16.23
Feb-93	7,881	16.7	13.85
Mar-93	2,495	16.6	6.18
Apr-93	1,022	15.2	0.00
May-93	773	15.3	0.22
Jun-93	631	14.7	0.98
Jul-93	601	14.6	0.00
Aug-93	573	14.2	0.00
Sep-93	513	13.9	0.00
Oct-93	718	14.3	0.23
Nov-93	728	13.1	0.84
Dec-93	1,024	13.9	1.21
Subtotal:	*26,371*	*179.8*	*39.74*

Year	Streamflow (cfs)	Hill Canyon WWTP (cfs)	Precipitation (in)
Jan-94	638	13.7	0.44
Feb-94	1,673	13.2	3.21
Mar-94	1,151	14.3	1.95
Apr-94	568	13.5	0.43
May-94	508	13.5	0.53
Jun-94	452	12.9	0.00
Jul-94	449	13.1	0.00
Aug-94	435	12.8	0.00
Sep-94	572	12.5	0.06
Oct-94	529	13.0	0.50
Nov-94	560	12.7	0.99
Dec-94	630	13.2	0.85
Subtotal:	***8,165***	***158.5***	***8.96***
Jan-95	10,124	17.4	10.18
Feb-95	1,121	13.3	1.27
Mar-95	4,585	16.4	7.47
Apr-95	1,303	14.5	0.55
May-95	1,006	14.4	0.23
Jun-95	835	13.9	0.79
Jul-95	624	13.8	0.00
Aug-95	555	13.6	0.00
Sep-95	574	13.2	0.00
Oct-95	596	13.5	0.00
Nov-95	563	13.1	0.15
Dec-95	1,260	13.5	0.56
Subtotal:	***23,146***	***170.5***	***21.20***
Jan-96	1,039	13.8	0.91
Feb-96	1,931	13.7	5.69
Mar-96	964	14.5	1.39
Apr-96	652	14.1	0.42
May-96	532	14.3	0.12
Jun-96	499	13.8	0.00
Jul-96		13.9	0.00
Subtotal:	***5,617***	***98.0***	***8.53***

Appendix 4

Water Balance Estimates

Camrosa Water District
Groundwater Modeling Study
Water Balance Analysis 1989 (AF)

	West of Fault	East of Fault	Total Basin
Extractions-Groundwater			
Camrosa WD [1]	0	1912	1912
SRMWD [1]	0	437	437
Other users [2]	1304	0	1304
Subtotal Groundwater	1304	2349	3653
Extractions-Conejo Creek [3]	1946	2194	4140
Total Extractions	3250	4543	7793
Consumption			
Camrosa WD customers	1002	3488	4490
SRMWD [4]	0	437	437
Other users [5]	3250	2194	5444
Total Consumption	4252	6119	10371
Imported water [6]	1002	2861	3863
Groundwater export [7]	0	1285	1285

Camrosa WD Total Consumption	13691	
Camrosa WD Total Import	11779	86%
Camrosa WD Total Groundwater	1912	14%

Notes:

(1) From groundwater extraction data - all east of Bailey fault.
(2) From groundwater extraction data - all west of Bailey fault.
(3) From Camrosa Water District (CWD) estimate for 1993 - split east/west based on land acreage.
(4) Equal to SRMWD groundwater extraction.
(5) Equal to other users groundwater extractions and Conejo Creek extractions.
(6) Based on same ratio as CWD total import/total consumption.
(7) CWD groundwater extractions + imported water - CWD consumption.

Camrosa Water District
Groundwater Modeling Study
Water Balance Analysis 1990 (AF)

	West of Fault	East of Fault	Total Basin
Extractions-Groundwater			
Camrosa WD [1]	0	1627	1627
SRMWD [1]	0	409	409
Other users [2]	1210	0	1210
Subtotal Groundwater	1210	2036	3246
Extractions-Conejo Creek [3]	2068	2332	4400
Total Extractions	3278	4368	7646
Consumption			
Camrosa WD customers	1241	3762	5002
SRMWD [4]	0	409	409
Other users [5]	3278	2332	5610
Total Consumption	4519	6502	11021
Imported water [6]	1241	3202	4443
Groundwater export [7]	0	1068	1068

Camrosa WD Total Consumption	14549	
Camrosa WD Total Import	12922	89%
Camrosa WD Total Groundwater	1627	11%

Notes:

(1) From groundwater extraction data - all east of Bailey fault.
(2) From groundwater extraction data - all west of Bailey fault.
(3) From Camrosa Water District (CWD) estimate for 1993 - split east/west based on land acreage.
(4) Equal to SRMWD groundwater extraction.
(5) Equal to other users groundwater extractions and Conejo Creek extractions.
(6) Based on same ratio as CWD total import/total consumption.
(7) CWD groundwater extractions + imported water - CWD consumption.

Camrosa Water District
Groundwater Modeling Study
Water Balance Analysis 1991 (AF)

	West of Fault	East of Fault	Total Basin
Extractions-Groundwater			
Camrosa WD [1]	0	1346	1346
SRMWD [1]	0	425	425
Other users [2]	823	0	823
Subtotal Groundwater	823	1771	2594
Extractions-Conejo Creek [3]	1201	1354	2555
Total Extractions	2024	3125	5149
Consumption			
Camrosa WD customers	600	1997	2598
SRMWD [4]	0	425	425
Other users [5]	2024	1354	3378
Total Consumption	2624	3777	6401
Imported water [6]	600	1583	2184
Groundwater export [7]	0	932	932

Camrosa WD Total Consumption	8450	
Camrosa WD Total Import	7104	84%
Camrosa WD Total Groundwater	1346	16%

Notes:

(1) From groundwater extraction data - all east of Bailey fault.
(2) From groundwater extraction data - all west of Bailey fault.
(3) From Camrosa Water District (CWD) estimate for 1993 - split east/west based on land acreage.
(4) Equal to SRMWD groundwater extraction.
(5) Equal to other users groundwater extractions and Conejo Creek extractions.
(6) Based on same ratio as CWD total import/total consumption.
(7) CWD groundwater extractions + imported water - CWD consumption.

Camrosa Water District
Groundwater Modeling Study
Water Balance Analysis 1992 (AF)

	West of Fault	East of Fault	Total Basin
Extractions-Groundwater			
Camrosa WD [1]	0	1746	1746
SRMWD [1]	0	442	442
Other users [2]	1248	0	1248
Subtotal Groundwater	1248	2188	3436
Extractions-Conejo Creek [3]	1196	1348	2544
Total Extractions	2444	3536	5980
Consumption			
Camrosa WD customers	169	1970	2139
SRMWD [4]	0	442	442
Other users [5]	2444	1348	3792
Total Consumption	2613	3760	6373
Imported water [6]	169	1526	1695
Groundwater export [7]	0	1302	1302

Camrosa WD Total Consumption	8413	
Camrosa WD Total Import	6667	79%
Camrosa WD Total Groundwater	1746	21%

Notes:

(1) From groundwater extraction data - all east of Bailey fault.
(2) From groundwater extraction data - all west of Bailey fault.
(3) From Camrosa Water District (CWD) estimate for 1993 - split east/west based on land acreage.
(4) Equal to SRMWD groundwater extraction.
(5) Equal to other users groundwater extractions and Conejo Creek extractions.
(6) Based on same ratio as CWD total import/total consumption.
(7) CWD groundwater extractions + imported water - CWD consumption.

Camrosa Water District
Groundwater Modeling Study
Water Balance Analysis 1993 (AF)

	West of Fault	East of Fault	Total Basin
Extractions-Groundwater			
Camrosa WD [1]	0	2606	2606
SRMWD [1]	0	615	615
Other users [2]	1384	0	1384
Subtotal Groundwater	1384	3221	4605
Extractions-Conejo Creek [3]	1271	1445	2716
Total Extractions	2655	4666	7321
Consumption			
Camrosa WD customers	134	1954	2088
SRMWD [4]	0	615	615
Other users [5]	2655	1445	4100
Total Consumption	2789	4014	6803
Imported water [6]	134	1348	1483
Groundwater export [7]	0	2000	2000

Camrosa WD Total Consumption	8981	
Camrosa WD Total Import	6375	71%
Camrosa WD Total Groundwater	2606	29%

Notes:

(1) From groundwater extraction data - all east of Bailey fault.
(2) From groundwater extraction data - all west of Bailey fault.
(3) From Camrosa Water District (CWD) estimate for 1993 - split east/west based on land acreage.
(4) Equal to SRMWD groundwater extraction.
(5) Equal to other users groundwater extractions and Conejo Creek extractions.
(6) Based on same ratio as CWD total import/total consumption.
(7) CWD groundwater extractions + imported water - CWD consumption.

Camrosa Water District
Groundwater Modeling Study
Water Balance Analysis 1994 (AF)

	West of Fault	East of Fault	Total Basin
Extractions-Groundwater			
Camrosa WD [1]	0	2916	2916
SRMWD [1]	0	600	600
Other users [2]	1248	0	1248
Subtotal Groundwater	1248	3516	4764
Extractions-Conejo Creek [3]	1352	1525	2877
Total Extractions	2600	5041	7641
Consumption			
Camrosa WD customers	355	2127	2482
SRMWD [4]	0	600	600
Other users [5]	2600	1525	4125
Total Consumption	2955	4252	7207
Imported water [6]	355	1367	1721
Groundwater export [7]	0	2155	2155

Camrosa WD Total Consumption	9514	
Camrosa WD Total Import	6598	69%
Camrosa WD Total Groundwater	2916	31%

Notes:

(1) From groundwater extraction data - all east of Bailey fault.
(2) From groundwater extraction data - all west of Bailey fault.
(3) From Camrosa Water District (CWD) estimate for 1993 - split east/west based on land acreage.
(4) Equal to SRMWD groundwater extraction.
(5) Equal to other users groundwater extractions and Conejo Creek extractions.
(6) Based on same ratio as CWD total import/total consumption.
(7) CWD groundwater extractions + imported water - CWD consumption.

Camrosa Water District
Groundwater Modeling Study
Water Balance Analysis 1995 (AF)

	West of Fault	East of Fault	Total Basin
Extractions-Groundwater			
Camrosa WD [1]	0	2632	2632
SRMWD [1]	0	624	624
Other users [2]	1384	0	1384
Subtotal Groundwater	1384	3256	4640
Extractions-Conejo Creek [3]	1332	1502	2834
Total Extractions	2716	4758	7474
Consumption			
Camrosa WD customers	195	2063	2258
SRMWD [4]	0	624	624
Other users [5]	2716	1502	4218
Total Consumption	2911	4189	7100
Imported water [6]	195	1429	1624
Groundwater export [7]	0	1998	1998

Camrosa WD Total Consumption	9373	
Camrosa WD Total Import	6741	72%
Camrosa WD Total Groundwater	2632	28%

Notes:

(1) From groundwater extraction data - all east of Bailey fault.
(2) From groundwater extraction data - all west of Bailey fault.
(3) From Camrosa Water District (CWD) estimate for 1993 - split east/west based on land acreage.
(4) Equal to SRMWD groundwater extraction.
(5) Equal to other users groundwater extractions and Conejo Creek extractions.
(6) Based on same ratio as CWD total import/total consumption.
(7) CWD groundwater extractions + imported water - CWD consumption.

Appendix 5 (diskette)

Well Lithology, Water Level, & Extraction Data (self-extracting compressed MS Excel 5.0 files)

Model Input Files for 1989-95 Calibration & Future Baseline Runs (self-extracting compressed text files)